May 27, 1930. P. BARBERON 1,759,931

EVER POINTED PENCIL

Filed Dec. 6, 1927 3 Sheets-Sheet 1

Fig. 1

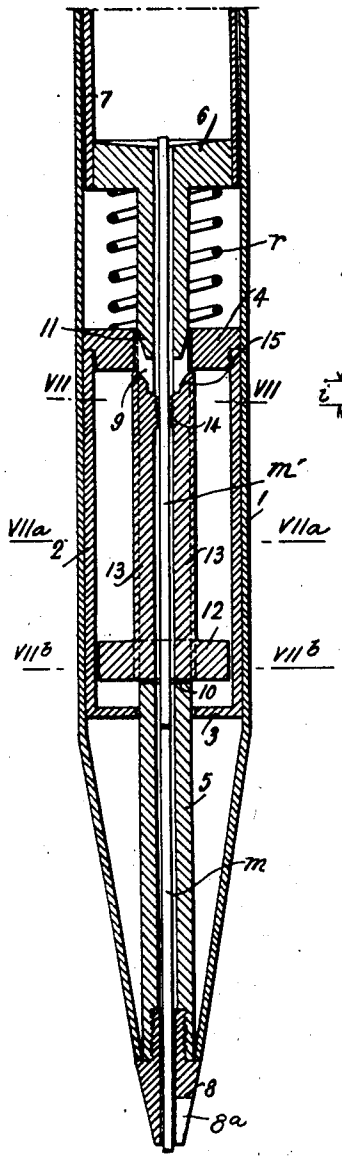


Fig. 2

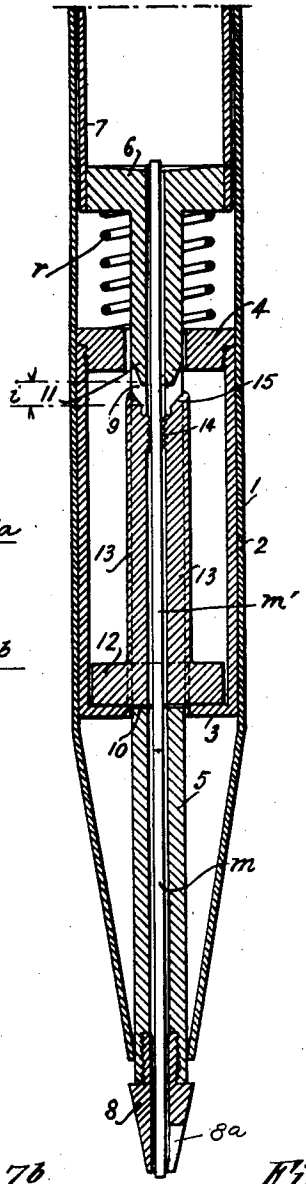


Fig. 3

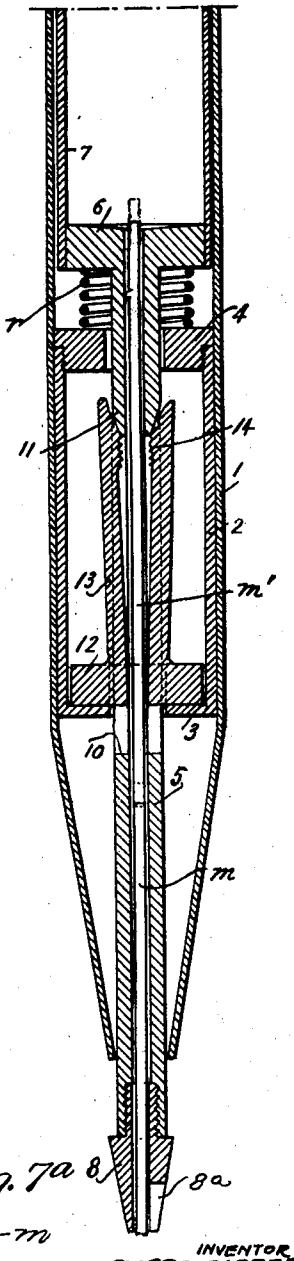


Fig. 7b

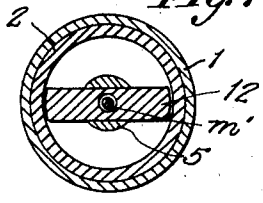
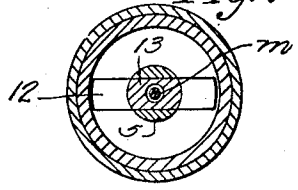


Fig. 7a



INVENTOR
PIERRE BARBERON
By
George L. Stachs
ATTORNEY

May 27, 1930. P. BARBERON 1,759,931

EVER POINTED PENCIL

Filed Dec. 6, 1927 3 Sheets-Sheet 2

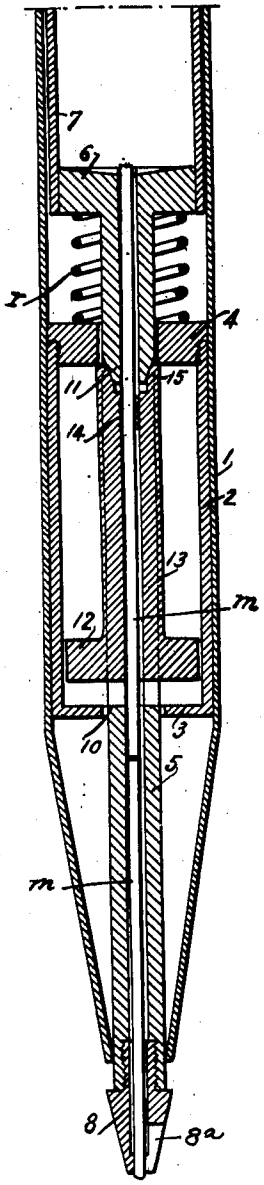


Fig.4

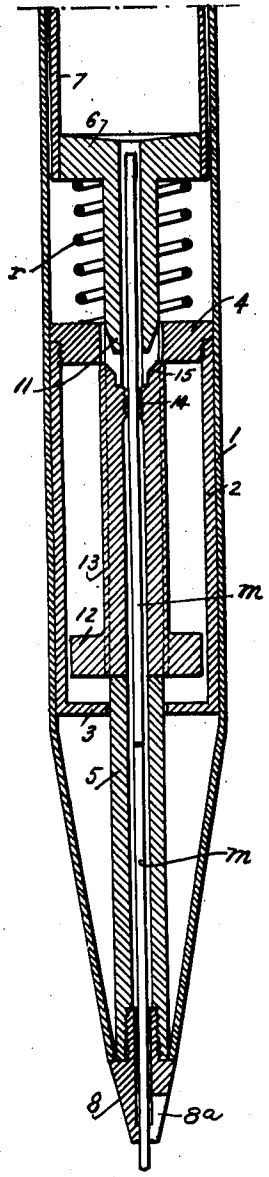


Fig.5

Fig.6

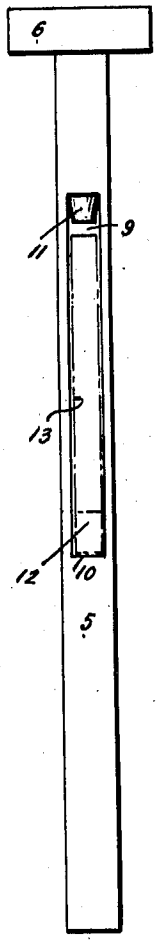
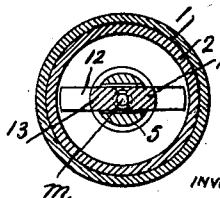


Fig.7



INVENTOR
PIERRE BARBERON
By George L. Sachs
ATTORNEY

May 27, 1930. P. BARBERON 1,759,931

EVER POINTED PENCIL

Filed Dec. 6, 1927 3 Sheets-Sheet 3

Fig. 2a

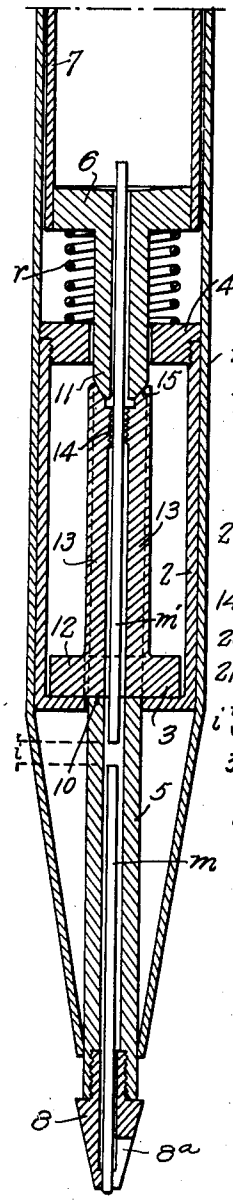


Fig. 8

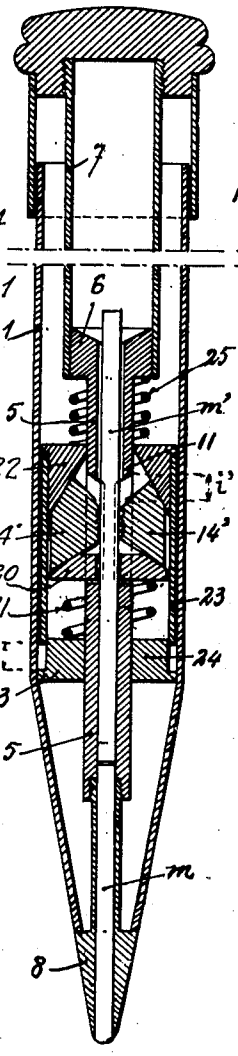


Fig. 9

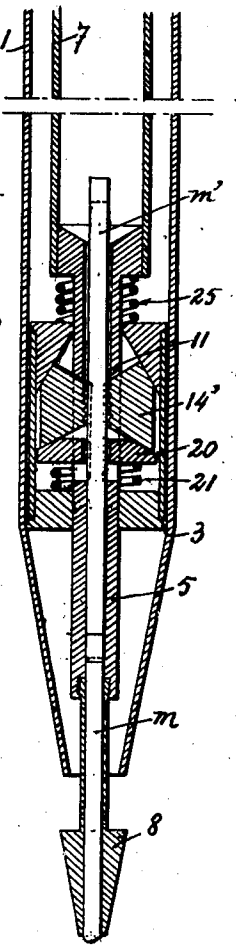
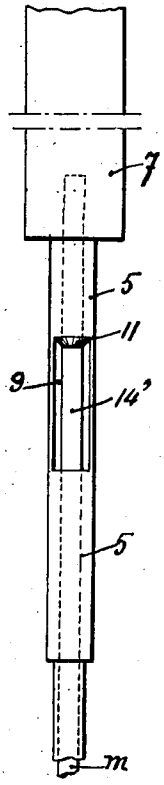


Fig. 10



INVENTOR
PIERRE BARBERON
By George L. Sachs
ATTORNEY

Patented May 27, 1930 1,759,931

UNITED STATES PATENT OFFICE

PIERRE BARBERON, OF LE FAYET, FRANCE

EVER-POINTED PENCIL

Application filed December 6, 1927, Serial No. 238,125, and in France December 8, 1926.

My invention relates to an ever-pointed pencil of the type in which the pieces of lead pass frictionally through the point of the pencil and are made to project from the pencil a predetermined amount by the operation of a control head or an actuating element adapted to descend and to rise in the main body of the pencil.

In the known pencils of this class the pieces of lead which are gripped by a clamp are pushed through the point of the pencil by means of said clamp.

In the pencil according to my invention, the pointed end is pushed out and carries the leads along, the leads are then maintained stationary while the pointed end is returned upward to the initial position and the extremity of the lead is uncovered. Consequently the clamp is not used for pushing the leads but first to keep them free in such a manner that the pencil being held in a position substantially vertical with point turned downward, the point having been advanced relatively to the body of the pencil, the leads fall freely and come in contact with the lead frictionally engaged at this point and second the clamp holds and stops the upward movement of the leads when the pointed end returns to its normal position.

The attached drawings illustrate by way of example two embodiments of my invention in which like reference numerals refer to similar parts.

Figure 1 is a longitudinal axial cross-section of the pencil in normal position with the lead in worn condition.

Figure 2 is a longitudinal axial cross-section of the pencil in intermediate position after initial pressure on the head.

Figure 2^a is a longitudinal axial cross-section of the pencil immediately preceding opening of the clamp.

Figure 3 is a longitudinal axial cross-section of the pencil after the clamp has been opened.

Figure 4 is a longitudinal axial cross-section of the pencil after return of the clamp and partial return of the guide tube.

Figure 5 is a longitudinal axial cross-section of the pencil after complete return to writing condition with the lead propelled.

Figure 6 is an elevation of the guide tube illustrating the slot within which the clamp slides and the tapered cone.

Figures 7, 7^a and 7^b are horizontal cross-sections taken on the lines VII—VII, VII^a—VII^a and VII^b—VII^b of Figure 1 respectively.

Figure 8 is an axial longitudinal cross-section of a second embodiment of my invention illustrating the pencil in normal position with worn lead.

Figure 9 is an axial longitudinal cross-section of said second embodiment illustrating the same after pressure on the actuating element.

Figure 10 is a detailed elevation of the guide tube illustrating the slot and position of the lead.

In the preferred form of my invention shown in Figures 1 to 7^b inclusive, the pencil comprises a main body 1 into which is inserted, and frictionally held in fixed position, a tube 2 having at the lower end the abutment 3 and at the upper end the screw plug 4. In the main body 1 is movable the guide tube 5 which extends continuously from the lower end 6 of the lead chamber 7 to the outer pointed end 8 of the pencil. Pointed end 8 of the pencil has a slot 8^a which allows said end 8 to resiliently and frictionally engage the lead m, which may vary in diameter. Pointed end 8 is screwed into the end of the guide tube 5; which traverses the abutments 3 and screw plug 4 which are pierced with a central hole for this purpose. As shown in Fig. 6, the tube 5 is pierced with a slot 9 whose lower end may be flat whilst at the upper end of the slot the tube comprises the tapered part 11 which serves as a cone to open the clamp. This clamp is disposed in the slot 9; and comprises a circular base portion 12 which slidably engages the inner wall of tube 2 and serves to guide it in the tube 2, and a circular tube of resilient material longitudinally slotted to form two branches 13 which are resilient and have toothed jaws 14 on the interior side thereof to exercise pressure by the elasticity of said branches upon the lead m'. The upper ends

of said branches, above the clamping jaws 14, have a beveled shape as observed at 15, thus coacting with the opening cone 11 of the tube 5. The length of the slot 9 somewhat exceeds the length of the clamp, so as to permit the displacement of the opening cone with reference to the ends 15 of said clamp. This length determines the amount of the lead extending out of the pencil at each operation. The distance between the abutment 3 and screw plug 4 is somewhat greater than the height of the clamp, which is centered and guided by the tube 2.

The operation is as follows: Fig. 1 shows the normal position of the device, in which the projecting lead *m* is supposed to be worn off. By pressing upon the movable upper head of the device (not shown), which is mounted on the lead chamber 7, this latter, together with the guide tube 5, the pointed end 8, the lead, and the clamp, will be lowered against the action of the spring *r*, until the said clamp, as shown in Fig. 2, makes contact with the abutment 3; then as the movement continues, the guide tube will further descend, drawing with it the lead *m* which is engaged by friction in the pointed end 8, whilst the upper piece of lead *m'*—held by the clamp (see Figure 2ª)—will remain stationary until the opening cone 11 (Fig. 3) is inserted between the ends 15 of the branches of the clamp whereby this latter will be opened. The piece of lead *m'* which it holds is thus released, and falls to make contact with the lead *m* situated below it.

When the head of the device is no longer pressed down, the guide tube and the clamp will rise by the action of the spring *r*. Clamp 13 is raised with the guide tube by reason of frictional engagement of branches 13 therewith. When upper ends of branches 13 make contact with the upper abutment 4; they are disengaged from the opening cone 11 and again close upon the lead *m'*, as shown in Fig. 4. However the guide tube continues to rise by the action of the spring *r*, and since the lead which is held by the clamp is stopped in its motion by the latter and the lead piece *m* is stopped by lead *m'*, the pointed end 8 will return to its initial position, uncovering the lower piece of lead *m* for the required length because the friction between lead *m'* and jaws 14 is greater than the friction between lead *m* and pointed end 8. This position is shown in Fig. 5; this length corresponds to the play between the opening cone 11 and the ends 15, i. e. to the stroke *i* shown in Figs. 2 and 2ª.

Another construction is shown in Figs. 8 to 10. As before, the guide tube 5 is formed integral with the lead holder 6—7 and with the pointed end 8 of the device. The tube 5 is pierced with a slot 9 (Fig. 10) as in the preceding case, in order to form a recess for the jaws of the clamps 14' which are entirely free and only guided in their axial sliding movement; said clamps 14' are normally driven up by a stop 20, which is urged by a spring 21, into a tapered closing member 22 in such manner as to maintain them closed. The said closing member 22 is secured to a tube 23 which is slidable in the outer main body 1 upon the stationary member 24 whose lower shoulder forms a stop for arresting—at the end of a stroke *i*—the descent of the tapered member 22 coacting with the spring 21. A spring 25 tends to maintain in an elastic manner the relative position of the member 22 with reference to the slidable guide tube.

If an excessive external pressure is exerted on the end of the projecting lead *m*, said lead and closed clamp rise slightly against the action of spring 25 which also tends to return the lead holder to the upper position.

The operation is essentially the same as in the preceding case. Fig. 8 shows the normal position; the clamp jaws are held in the tapered member 22, so that they are pressed upon the upper piece of lead *m'*. By pressing down the movable head of the device together with the holder 7, the guide tube 5 and the pointed end 8, and thereafter allowing the whole to rise, the stages of the operation are as follows. The aforesaid parts, together with the tapered member 22, the jaws 14', the stop 20 and the lead pieces, will descend through the distance *i* until the tube 23 makes contact with the shoulder 3 and the tapered member 22 is stopped; the jaws 14', continuing to descend by action of tapered cone 11, now open because of the tapered nature of said cone and stop 20. The descent continues until the opening cone 11 of the guiding tube enters between the jaws 14' after passing through the space *i'* (Fig. 8); the jaws 14' are impelled by the cone 11 and will thus descend together with the stop 20, compressing the spring 21, so that the jaws will be released from the closing member 22 and the opening cone 11 will then open the jaws. The upper lead piece *m'* which during the stroke *i'* became separated from the lower lead piece *m* held by friction in the pointed end 8 (Fig. 9), will now, since the clamp is open, drop down freely and again make contact with the lead *m* as shown by the dotted lines in Fig. 9. On the return movement, due to the combined action of the springs 21 and 25, the whole of the guide tube, the movable stop 20, the tapered member 22 and the jaws 14' which are held open by the opening cone 11 which is still engaged between the said jaws, will rise by a certain amount, for instance *i'*, after which, the spring 21 being fully expanded as illustrated in Figure 8, tapered member 22 ceases to rise and cone 11 is disengaged from the clamp under the action of spring 25 and the clamp now closes upon the lead and is engaged in its closing tapered member 22. Finally, as the spring 25 continues to expand, the guide tube 5 with the

pointed end 8 will rise to the upper limit, while the leads are held fast by the clamp, so that the end of the lead will be uncovered by the pointed end of the pencil device.

The elastic resiliently supported stop 20 may have its contact face formed as an inclined plane so as to facilitate the opening of the clamp when the opening cone 11 is inserted between the jaws.

Obviously, the details of construction may be varied within wide limits without departing from the spirit of the invention.

Claims:

1. An ever-pointed pencil, comprising a clamping device for normally holding an upper piece of lead in a stationary position relatively to the main body of the pencil, a movable inner tube holding a lower piece of lead, affording passage thereto through its pointed end and adapted to descend axially with reference to the main body by suitable controlling means, means serving to release the upper piece of lead from its clamping device when the said inner tube is lowered allowing the same to fall freely and abut said lower piece of lead, means for raising again said inner tube into its normal position, and means by which the upper piece of lead is again engaged in the said clamping device before the end of the ascent of the inner tube, whereby the latter during its return to the normal position will slide upon the lower piece of lead and will thus uncover part of the lead.

2. An ever-pointed pencil, which comprises a clamp for normally holding an upper piece of lead in a stationary position relatively to the main body of the pencil, an inner tube with pointed pencil end which is axially movable with reference to the said main body and allows a lower piece of lead to pass through it by easy friction, a controlling device connected with the said inner tube and comprising means adapted for opening the said clamp whereby the latter will be opened when the inner tube is lowered, allowing said upper piece of lead to fall and abut said lower piece of lead, and means for returning the said controlling device to the normal position, and for again closing the said clamp before the said position is attained.

3. An ever-pointed pencil, comprising an inner tube with pointed pencil end which is axially movable together with the controlling device and which allows a lower piece of lead to pass through it by friction, a clamp which normally seizes an upper piece of lead and is freely movable lengthwise in the main body of the pencil, a lower abutment for the said clamp a device for opening the clamp which is axially movable together with the controlling device, a reaction spring for raising the latter together with the said inner tube, and an upper abutment coacting with the said clamp by which the latter will be disengaged from its opening device before the end of the ascent of the said inner tube.

4. An ever-pointed pencil, comprising a hollow controlling head, a lead container formed by said hollow controlling head, a tube with pointed pencil end prolonging said container and in which a bore is formed throughout its entire length for the passage of the leads, the whole device thus formed being axially movable in the main body of the pencil, a reaction spring for returning the said device to the normal position, a clamp adapted to normally seize the upper piece of lead through suitable apertures in the said tube, upper and lower abutments coacting with the said clamp, and an opening cone adapted to open the said clamp, formed integral with the said tube, and situated at a short distance from said clamp when in the normal position.

5. An ever-pointed pencil, comprising a hollow controlling head, a lead container formed by said hollow controlling head, a tube with pointed pencil end prolonging said container and in which a bore is formed throughout its entire length for the passage of the leads, the whole device thus formed being axially movable in the main body of the pencil, a reaction spring for returning the said device to the normal position, a clamp adapted to normally seize the lead through suitable apertures in the said tube, upper and lower abutments coacting with the said clamp, an opening cone adapted to open the said clamp, formed integral with the said tube, and situated at a short distance from said clamp when in the normal position, said clamp being made in one piece and pierced at the center of its lower end for the passage of an upper piece of lead.

6. An ever-pointed pencil, comprising a hollow controlling head, a lead container formed by said hollow controlling head, a tube with pointed pencil end prolonging said container and in which a bore is formed throughout its entire length for the passage of the leads, the whole device thus formed being axially movable in the main body of the pencil, a clamp which consists of two separate jaws extending through apertures in the said tube and freely mounted between a lower elastic abutment urged by a spring which abuts against the stationary stop, and a tapered closing member slidable by friction in the main body of the pencil, a shoulder formed on the said tube, and a spring interposed between said shoulder and said tapered closing member, a lower abutment limiting the descent of said tapered member, and an opening cone adapted to open the jaws of the said clamp and disposed upon said tube.

7. An ever-pointed pencil, comprising a hollow controlling head, a lead container formed by said hollow controlling head, a tube with pointed pencil end prolonging said

container and in which a bore is formed throughout its entire length for the passage of the leads, the whole device thus formed being axially movable in the main body of the pencil, a clamp which consists of two separate jaws extending through apertures in the said tube and freely mounted between a lower elastic abutment urged by a spring which abuts against the stationary stop, and a tapered closing member slidable by friction in the main body of the pencil, a shoulder formed on the said tube, and a spring interposed between said shoulder and said tapered closing member, a lower abutment limiting the descent of the said tapered member, and an opening cone adapted to open the jaws of the said clamp and disposed upon said tube, the lower elastic abutment being formed with inclined surfaces coacting with like surfaces formed on the jaws of the clamp.

8. An ever-pointed pencil comprising a clamping device for normally holding an upper piece of lead in a stationary position relative to the main body of the pencil, a movable inner tube holding a lower piece of lead and affording frictional passage thereto through its pointed end and adapted to descend axially with reference to the main body by suitable controlling means, means serving to release the upper piece of lead from its clamping device when the said inner tube is lowered, and letting it fall freely down upon the lower piece of lead, means for raising again said inner tube into its normal position and means by which the upper piece of lead is again engaged in said clamping device before the end of the ascent of the inner tube whereby the latter during its return to the normal position will slide upon the lower piece of lead and will thus uncover the lower end of same.

In testimony whereof I have signed my name to this specification.

PIERRE BARBERON.