

(No Model.)

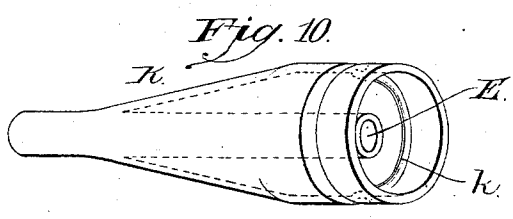
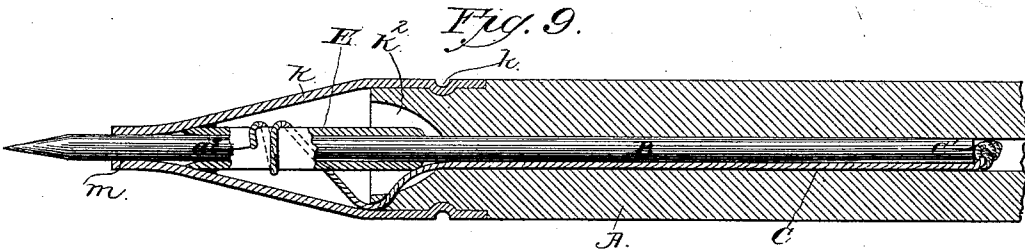
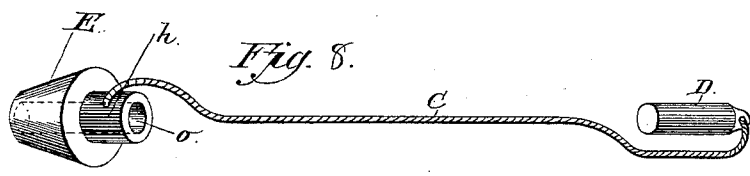
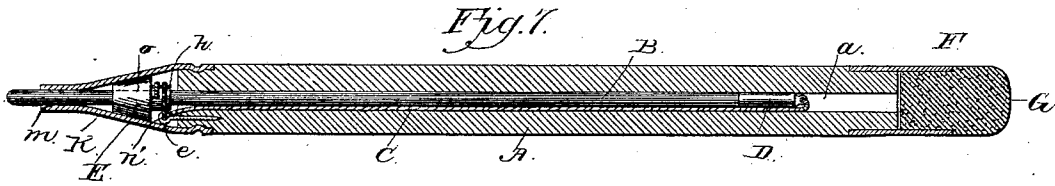
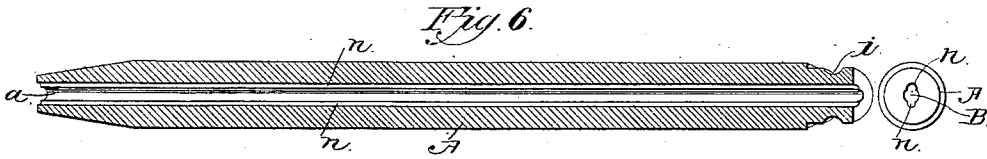
2 Sheets—Sheet 2.

P. E. WIRT.

LEAD PENCIL.

No. 370,438.

Patented Sept. 27, 1887.



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UNITED STATES PATENT OFFICE.

PAUL E. WIRT, OF BLOOMSBURG, PENNSYLVANIA.

LEAD-PENCIL.

SPECIFICATION forming part of Letters Patent No. 370,438, dated September 27, 1887.

Application filed January 19, 1887. Serial No. 234,791. (No model.)

To all whom it may concern:

Be it known that I, PAUL E. WIRT, a citizen of the United States, residing at Bloomsburg, in the county of Columbia and State of Pennsylvania, have invented a new and useful Improvement in Lead-Pencils, of which the following is a specification.

My invention relates to an improvement in lead-pencils, and to that class which employs a movable lead, the design being to provide means for propelling the lead to the point of the pencil.

The object of the improvement herein contemplated is to give a cheap and simple propelling lead-pencil, wherein constant sharpening is avoided, which will cost but a trifle more than the ordinary wooden pencil, though possessing advantages fourfold, which will never grow short, but can be used while any portion of the lead remains, and in which the lead cannot retreat or be forced back within the case when the pressure during writing is exerted.

With these ends in view the invention consists, broadly, in actuating a movable lead by means of a cord or thread, which is drawn upon or wound to cause the lead to be forced forward.

It also consists in providing a movable spindle inside the case of the pencil, on which spindle the cord is wound.

It further consists in making a portion or section of the pencil-case movable, preferably either of the end sections, and connecting the thread or cord to such movable section, so that the turning of the latter causes the cord to be drawn upon or wound so as to force the lead outward.

The invention consists, further, in certain minor details of construction, arrangement, and combination of parts, as will be hereinafter set forth, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of my improved pencil complete. Fig. 2 is a vertical longitudinal section, the parts being enlarged. Fig. 3 is a detached view, partly in section, with the front or point section and the ferrule or eraser-cap removed. Fig. 4 is an enlarged section of the ferrule or movable end section of the case and its spindle. Fig. 5 is a detail side view of the

pencil-case with the ferrule and point-section removed, illustrating certain improvements in the method of supporting the doubled ends of the cord. Fig. 6 is a detail sectional view of the case, showing another improvement in the method of guiding the thread or cord. Fig. 7 is a longitudinal section of a modification of that construction shown in the previous figures of the drawings, in which modification the spindle on which the cord is wound is connected to the point-section. Fig. 8 is a detailed view of the spindle and cord or thread shown in this latter figure. Fig. 9 is a longitudinal section of another form of my invention. Fig. 10 is a detail view of the point-section of the pencil-case.

Like letters of reference are used to indicate corresponding parts in the several figures.

Referring to the drawings, A designates a cylindrical case or handle, preferably constructed of wood for cheapness only, as such material will answer all the purposes, though it may be made of hard rubber or other suitable material. This case or handle is bored throughout its length to receive a movable lead of any color and any preferred size. This lead (designated by the letter B) occupies the entire length of the central opening or bore, *a*, of the case or handle, and may be in one single piece. The diameter of the bore *a* should be slightly larger than the diameter of the lead B, when no special guiding means for the cord or thread is provided, for in such case the cord or thread has to occupy the bore *a* along with the lead. This is shown in Figs. 2 and 3; but when guide-grooves for the cord or thread are employed the bore *a* should but slightly exceed the diameter of the lead B. The ends of the case or handle at the lower edge are extended beyond the extremity of the bore *a*, as at *b* *d*, and these extensions are perforated to provide eyes (two in number) *e* *f*, the letter *e* designating the eyes at the point end of the case or handle, while the letter *f* refers to the eyes at the other end.

C designates a greased cord or thread of silk or other strong material doubled at each end of the case or holder and passed through the eyes *e* *f* at said ends, the diameter of the eyes preferably exceeding the width of the cord or thread, so that the latter can be drawn readily through the eyes. In the construction shown

in Figs. 1 to 7, inclusive, the thread or cord is doubled at both ends of the case or handle, forming two branches of the cord or thread, both of which branches occupy the bore *a*.
 5 One end of the cord is attached to a movable block or follower, D, cylindrical in form and occupying the bore *a* at the rear end of the movable lead B.

It will be apparent that when the cord or
 10 thread is drawn upon, the block or follower D is carried down the bore *a*, and, pressing against the rear end of the movable lead B, forces the latter forward and feeds it to the point of the pencil as required.

To provide simple and efficient means for
 15 actuating the thread or cord and moving the lead forward, as stated, I employ a rotating spindle, E, which may be secured to the ferrule or butt-end section of the pencil, as shown
 20 in Figs. 1 to 7, inclusive, or to the point-section, as shown in Figs. 7 and 8. This spindle E is provided with a prolongation or extension, *h*, which serves as a drum on which the
 25 cord or thread is wound, said prolongation or extension being perforated for the attachment of the rear end of the cord or thread. It will be understood that as the spindle E is rotated
 30 the cord or thread is wound upon the prolongation or extension *h*, as seen clearly in Fig. 2, for the purpose heretofore explained.

To provide for the operation of the spindle
 from the exterior, I fasten or secure the spindle rigidly to the ferrule, eraser-cap, or butt-
 35 end section, F. This butt-end section or ferrule serves two purposes: it confines the eraser G, and also serves as a medium for operating the spindle E. To enable this operation of the ferrule or butt-end section of the pencil and yet prevent it from coming off, I
 40 groove the rear end of the case or handle A annularly, as at *i*, and indent or groove the ferrule, as at *k*, the indentation of the ferrule occupying the groove of the case or handle. By this arrangement it will be understood that
 45 the annular indentation of the ferrule turns within the groove of the case or handle, and at the same time the ferrule cannot come off.

The operation of my invention will be readily understood from the foregoing description,
 50 taken in connection with the accompanying drawings. The spindle being rigidly held to the ferrule or butt section, when the latter is turned by the fingers of the user, the cord or thread is drawn upon and the slack taken up
 55 or wound on the prolongation or extension. The drawing of the cord rearwardly forces the follower or block against the rear end of the pencil and feeds the front or point end thereof forward to the required degree.

To provide for holding the lead from dropping
 60 out, the point-section K is made small enough at the orifice or passage *m*, where the lead comes out, to bind slightly about the lead and prevent the same from slipping from
 65 the case. The point-section K and butt-end section F are both made from thin metal, the former preferably of such metal as has a slight

elasticity or spring to contribute toward the holding of the lead. This retaining action of the point-section K may be still further in-
 70 creased by slitting it to provide engaging spring-tongues, or the inner surface of the point-section at the orifice *m* may be serrated or corrugated to bite upon the lead. These and other like modifications may be made
 75 without departing from the spirit or sacrificing the advantages of my invention.

It will be understood that as the thread or
 cord lies alongside the lead throughout, it also
 aids to keep the lead bound within the case. 80

All tendency of the lead to retreat or be forced back by the pressure of the point thereof on the paper is overcome by the block or follower D, as the pressure of the lead rearwardly is against the movement of the cord. I do
 85 not wish to be limited to the use of the block or follower K as a means for acting upon the rear end of the lead, as a simple knot may be found sufficient for all the purposes.

In Fig. 5 I show an improvement in the
 90 method of supporting the doubled portions of the cord or thread. Instead of extending the case or handle A, as at *e f* in Figs. 1, 2, and 3, I cut off the ends of the case perfectly plain, and provide small screw-eyes *e f*, which are screwed
 95 into the respective ends of the case or handle, and receive the double portions of the cord or thread. The operation is in no wise changed by this improvement in the construction of
 100 parts.

In Fig. 6 I provide guide-grooves *n* (one or
 two, as circumstances may require) on one or more sides of the bore *a*. This improvement is especially desirable where strong or thick
 105 thread is employed, in order to make room for the thread and not cause it to bear or crowd too strongly against the lead.

In Figs. 7 and 8 is shown a modification in which the spindle E is rigidly secured to the
 110 point-section K, said point-section being movable in the same manner as the ferrule or butt-end section is shown and described to be in the other figures of the drawings. In this form the spindle E is provided with a central opening, *o*, through which the lead passes in being
 115 propelled or drawn out. The point-section is indented or grooved round the lower end of the case or handle, so as to be rotary movable about the same. The thread or cord C
 120 in this instance only makes one turn, or rather, is doubled only at one point—namely, the point *n'* or eye *e*—and only one thickness of the thread lies alongside of the lead within the case.

The operation of this form of my invention
 125 is essentially the same as the other, and hence need not be repeated. In the class of propelling lead-pencils now on the market, or, as they are termed, "automatic pencils," it is found impossible to prevent the lead from retreating
 130 or being forced back within the holder when a heavy pressure is brought to bear upon the paper in writing. In my invention this is effectually overcome, as the path of movement

of the lead rearwardly directly opposes the movement of the thread or cord.

The pencil will cost but a trifle more than the ordinary wooden pencil, and yet never require sharpening, cannot grow short, and can be used while any portion of the lead remains in the case or handle.

In Figs. 9 and 10 I show another modification of the construction. This form I prefer, as it embodies the most simple, practicable, and efficacious type of this style of pencil. The construction shown in Figs. 9 and 10 very closely resembles that which is illustrated in Figs. 7 and 8. The spindle E is in the last form represented in the form of a tube, the front edge or end of which is rigidly secured to the inner side of the point-section K. The said point-section is movable around the front end of the case or handle A, in the manner before described. The front end of the case or handle is provided with a conical-shaped, flaring, or enlarged opening, K², for the purpose of allowing the tubular spindle E to project up within the case or handle and afford room for the thread as it is wound around the spindle. The thread C is knotted at the inner end, as at C', which knot acts against the rear end of the movable lead. The outer end of the thread or cord is secured to the tubular spindle E at a', is wrapped around the spindle, passes back within the enlarged opening K², and then through the bore a of the case or handle.

The operation of this form of my invention does not differ in any material respect from that before described. The rotation of point-section K winds the cord or thread on the tubular spindle E, causing the lead to be fed forward through the spindle E and beyond the point-section.

I do not wish to be understood as limiting myself to the form, proportion, or particular construction of the parts described and claimed, as such may be modified to a certain extent without departing from the spirit of my invention.

Having thus described my invention, I claim—

1. In a lead-pencil, in combination with the case or handle containing the movable lead, the thread or cord to feed the lead, and the spindle on which the thread or cord is wound, for the purpose set forth.

2. In a lead-pencil, in combination with the case or handle containing the lead, the thread to feed the movable lead, the spindle on which the cord or thread is wound, and the movable section of the case or handle for actuating the spindle, for the purpose set forth.

3. In a lead-pencil, in combination with the case or handle for the lead, the thread to feed the movable lead forward, and the movable section of the case to draw or wind up the thread, for the purpose set forth.

4. In a lead-pencil, in combination with the case or handle containing the movable lead, the block or follower to feed the lead, and

means, such as the thread or cord shown, for actuating the block, as set forth.

5. In combination with the rigid case or handle containing the movable lead, the thread to move the lead when drawn upon, and the spindle independent of the case or handle to draw the thread, as set forth.

6. In combination with the case or handle containing the lead, a thread to feed the lead when the said thread is drawn upon, as set forth.

7. In combination with the case or handle having a bore or passage for the movable lead, and grooved on one or both sides of the bore or passage, the actuating-thread for the lead, seated in the grooves and connected to the lead, substantially as described.

8. In combination with the case containing the movable lead, the thread fitted within the case and doubled at one or both ends, eyes to receive the doubled ends of the thread, and the movable part for actuating the thread, as set forth.

9. In combination with the case or handle containing the lead, the thread to feed the lead, which thread is doubled at an intermediate point, and the movable part for actuating the thread, as set forth.

10. In combination with the case or handle containing the lead, the point-section to grasp the lead and prevent it from dropping out, and the thread for actuating the lead, as set forth.

11. In combination with the case or handle containing the lead, the thread to feed the lead, and the movable spindle actuated from the exterior to draw upon the thread, as set forth.

12. In combination with the case or handle containing the lead, the thread to feed the same, and the movable section of the case turning upon the same and serving to actuate the thread from the exterior of the case, as set forth.

13. In combination with the case or handle containing the lead, the thread to feed the same, the spindle to draw upon the thread, and the movable end section of the case or handle rigidly connected to the spindle and operating the thread from the exterior, as set forth.

14. In combination with the case or handle containing the lead, the movable point-section, and the thread or cord actuated by the point-section to feed the lead, as set forth.

15. In combination with the case or handle containing the lead, the movable point-section, the hollow spindle secured to the point-section, and the thread or cord secured to the spindle and adapted to be wound thereon to feed the lead, as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

Witnesses: PAUL E. WIRT.

C. C. PEACOCK,
GEO. S. ROBBINS.