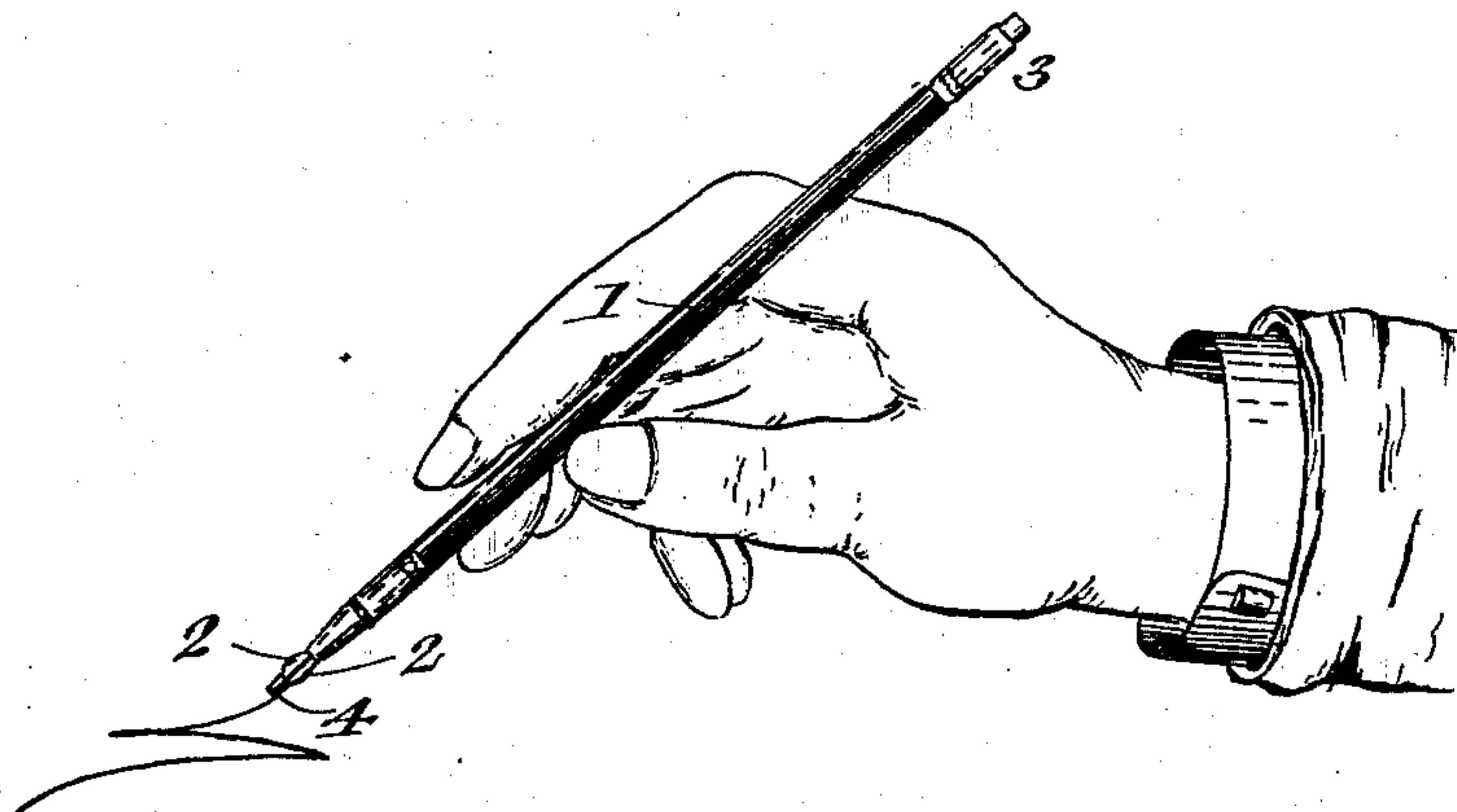


(No Model.)

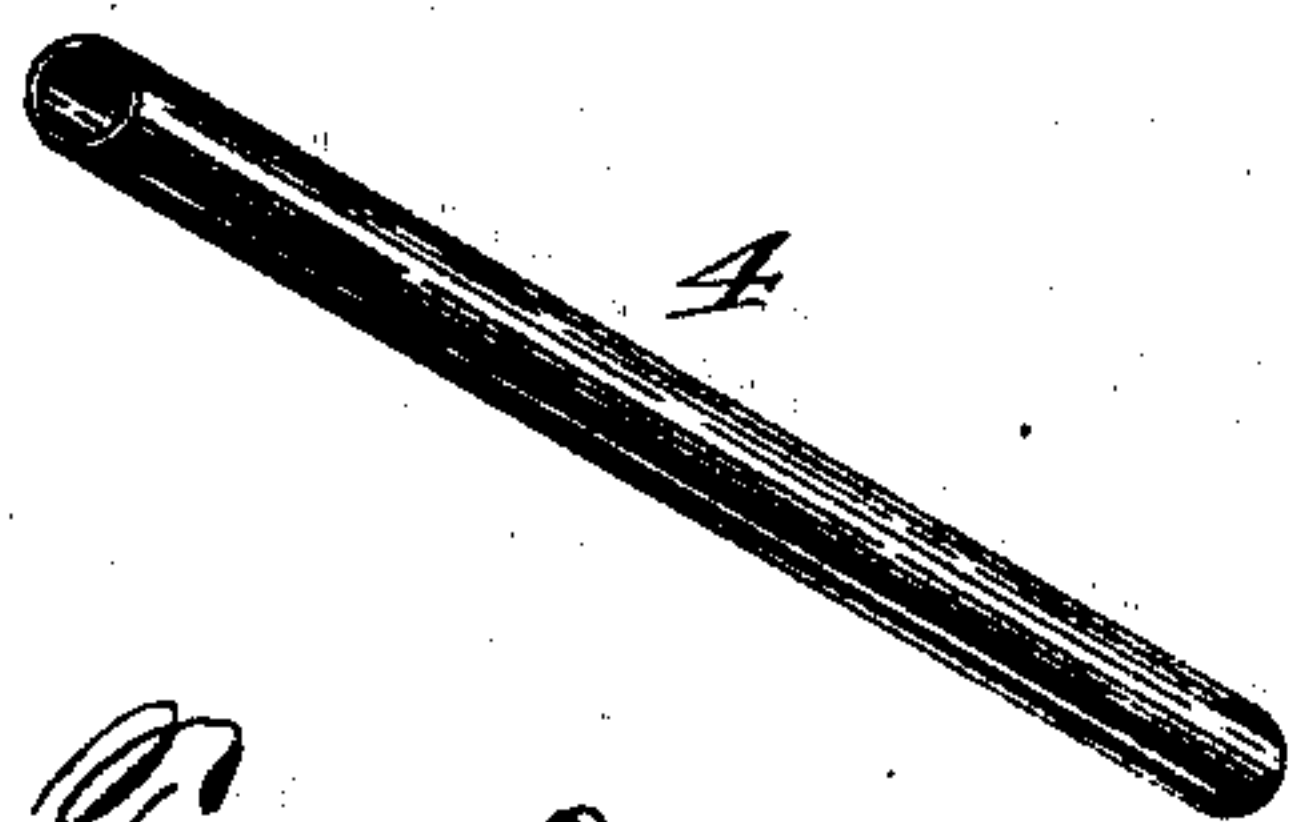
J. A. COOK.  
PENCIL LEAD.

No. 524,757.

Patented Aug. 21, 1894.



*Fig. 1.*



*Fig. 2.*



*Fig. 3.*

Witnesses:  
Samuel J. Harris.  
Geo. A. Wightman

Inventor.  
John A. Cook.  
By Miller & Haddock.  
Attorneys.



# UNITED STATES PATENT OFFICE.

JOHN A. COOK, OF BUFFALO, NEW YORK.

## PENCIL-LEAD.

SPECIFICATION forming part of Letters Patent No. 524,757, dated August 21, 1894.

Application filed December 22, 1893. Serial No. 494,390. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN A. COOK, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Pencil-Leads; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to figures of reference marked thereon, which form a part of this specification.

My invention relates to certain improvements in pencil-leads of that particular class which are adapted for adjustable insertion between holding-jaws carried by the shell or casing of the pencil, or which are adapted to be fed forward, as desired, by any suitable means as their ends are worn away.

The primary object of my invention is to provide a self-sharpening lead of the above mentioned type with which a fine line can be made at all times without the necessity of cutting or trimming the exposed extremity.

With this end in view, as well as others, which will be distinctly hereinafter stated, my invention consists broadly of a hollow pencil-lead.

I will now proceed to minutely describe the manner in which I have carried out my invention and then claim what I believe to be novel.

In the drawings, Figure 1 is a side view of a pencil containing my improved lead. Fig. 2 is a perspective view of my improved lead removed from the pencil, and Fig. 3 is an end view of the same.

Referring to the drawings, 1 is the shell or casing of the pencil and 2, 2, are the protruding ends of the holding-jaws, between which the lead is adjustably held.

3 is the protruding end of a spring-pressed plunger for temporarily separating the holding-jaws in order that the lead may be properly adjusted in the holding-jaws as its end becomes worn away.

I have shown the style of pencil just outlined simply to illustrate broadly that class to which my improved form of lead is or can be applied it being understood that it is applicable to any and all forms of pencils in which the lead is either adjustably held or fed forward as desired by any suitable means.

4 is my improved form of lead which is

preferably of hollow cylindrical configuration, as shown, although other hollow forms might be advantageously employed such as tubes which are triangular, square, hexagonal, &c., in transverse section, the cylindrical or circular form being best adapted however, for universal use. The material employed in its construction is the same as is now used in the manufacture of ordinary leads. The wall of this lead tube 4 is preferably thin in order that a correspondingly fine line may be made upon the paper as its edge is brought in contact therewith in the act of writing or drawing.

My improved lead has, as shown, a circumferential edge and, in the act of writing, this edge is worn away uniformly around its entire circumference as the pencil is naturally turned or shifted in the hand, thus becoming self-sharpening simply from actual use. This results in, not only saving the time, now thrown away in sharpening the points of the ordinary leads but in utilizing every atom of the lead thus preventing the very considerable waste of material involved in the sharpening process.

Less material is required in the formation of my improved form of lead, than in those now in common use and as there is no waste, common to sharpening, the life of the lead is correspondingly prolonged.

Another important feature due to my improved structural formation, is its increased strength, not only along its entire body, but especially at its point of contact with the paper, as the absence of any abrupt taper, which is common in sharpened leads, greatly lessens the liability of breakage at the contacting end. In fact it requires an extraordinary pressure to fracture the exposed end of my improved form of lead.

I claim—

1. A hollow pencil-lead substantially as and for the purpose stated.

2. A pencil-lead of hollow cylindrical configuration substantially as and for the purpose stated.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN A. COOK.

Witnesses:

O. E. HODDICK,  
W. T. MILLER.