

(No Model.)

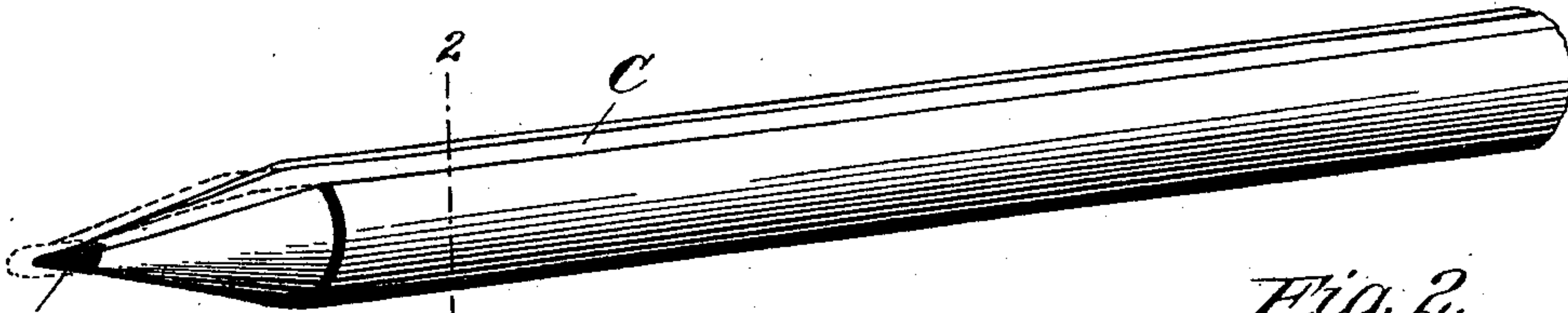
2 Sheets—Sheet 1.

A. KAISER.  
PENCIL.

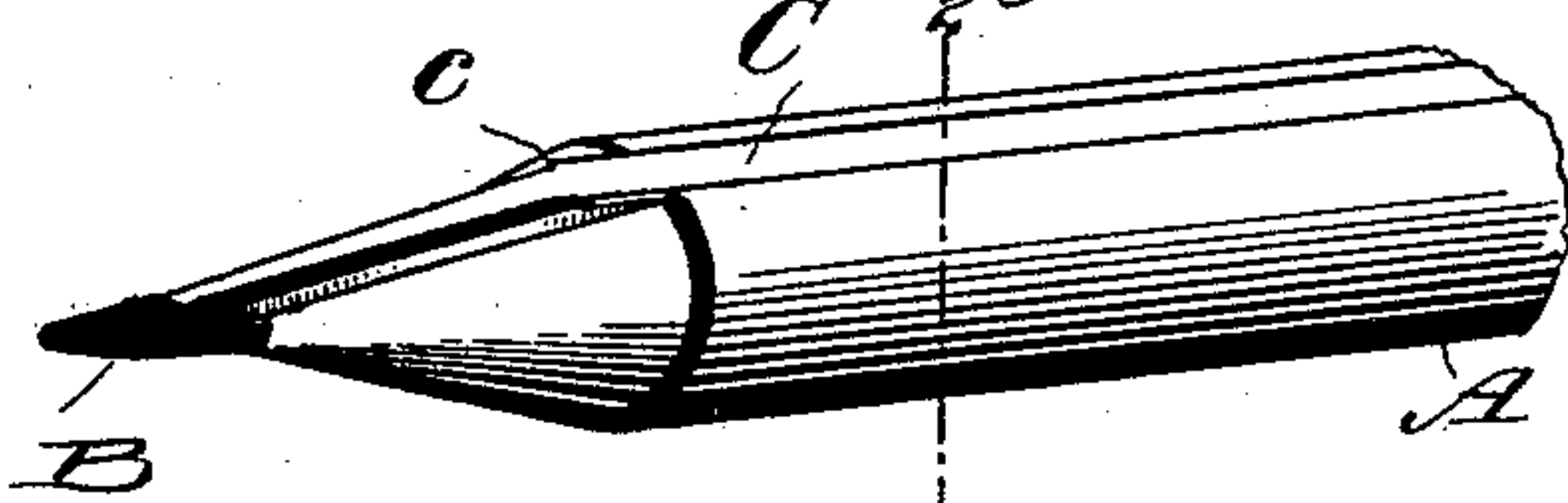
No. 583,754.

Patented June 1, 1897.

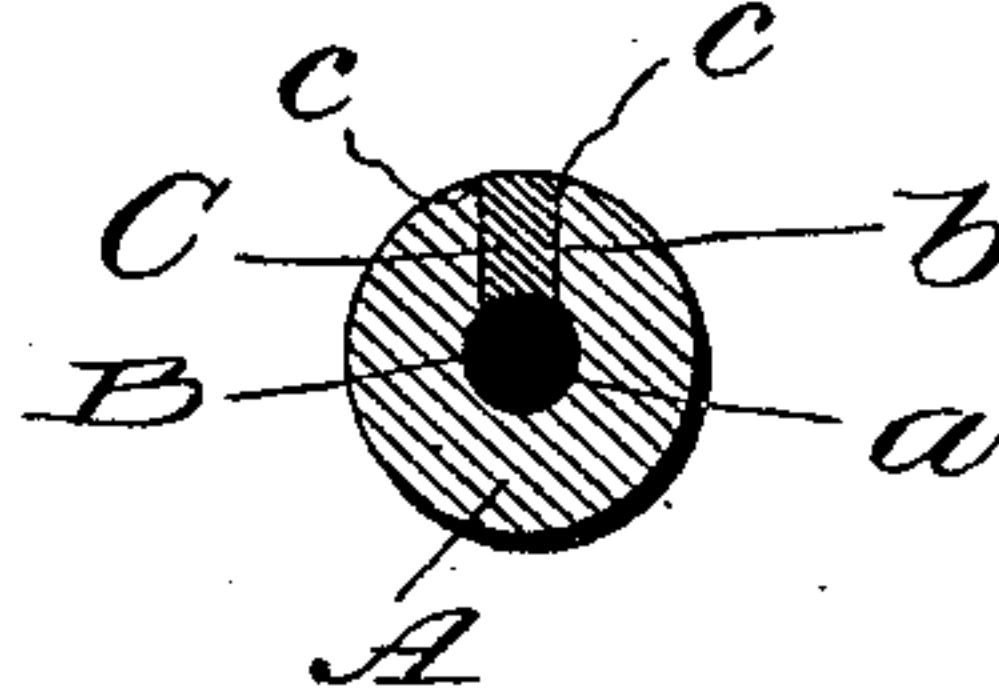
*Fig. 1.*



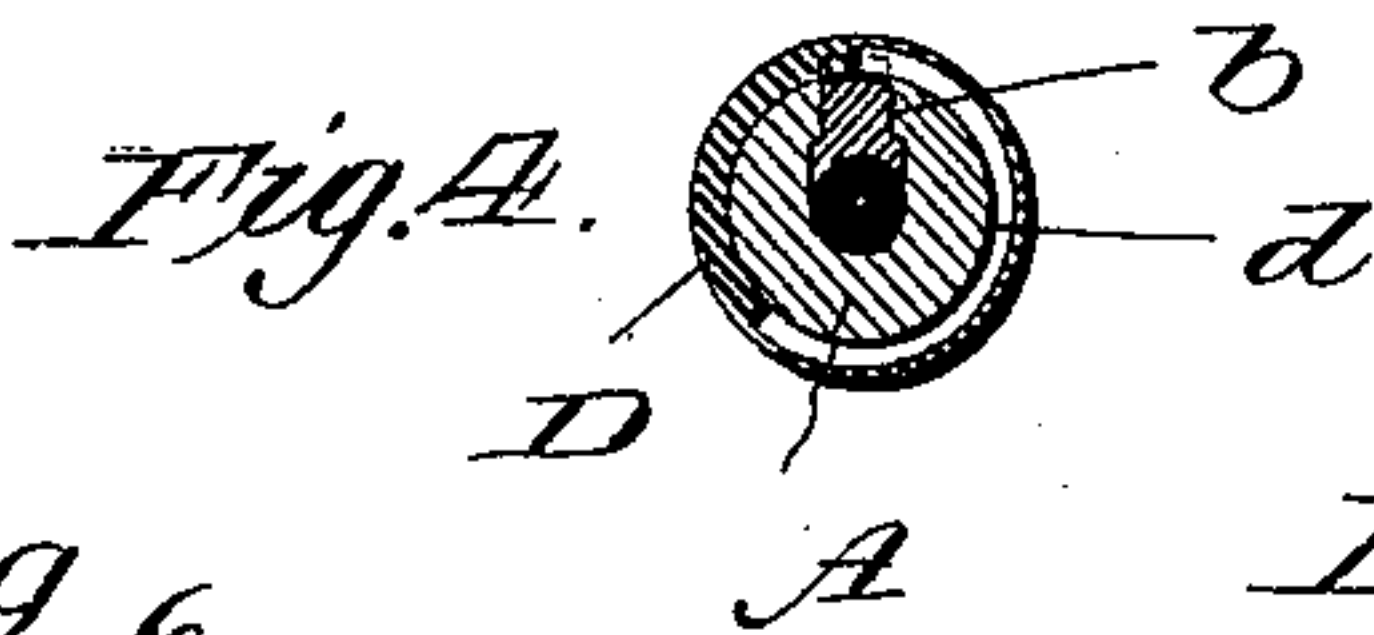
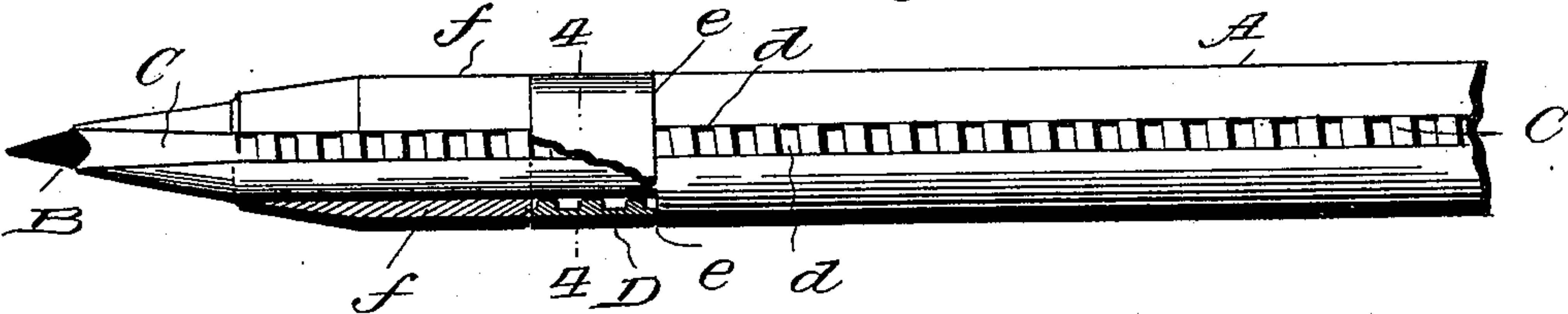
*Fig. 1a.*



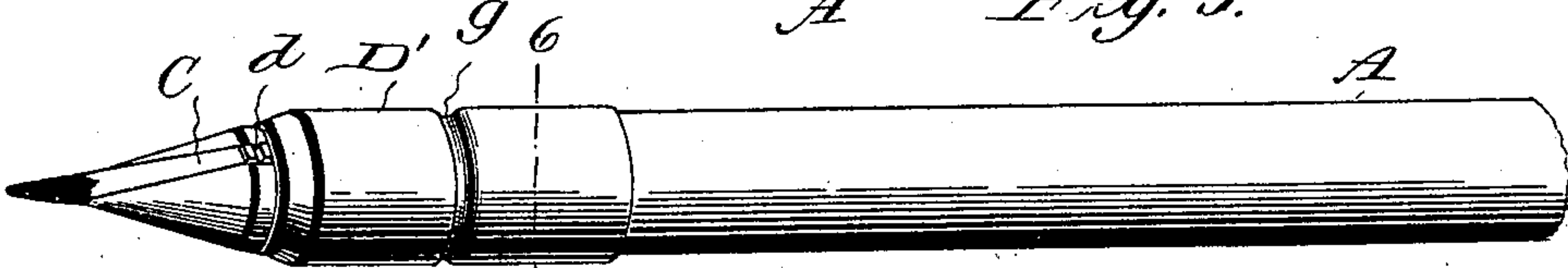
*Fig. 2.*



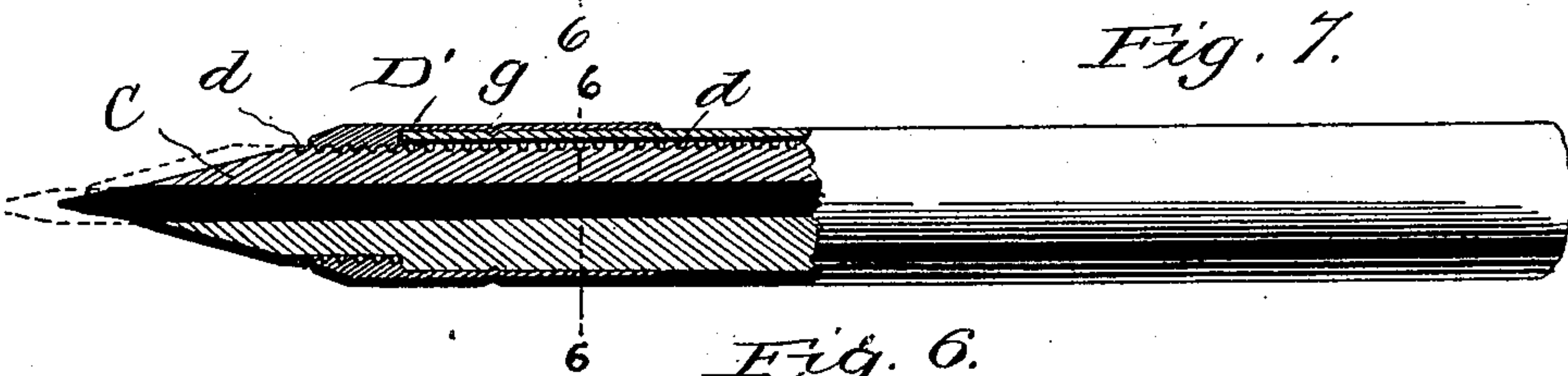
*Fig. 3.*



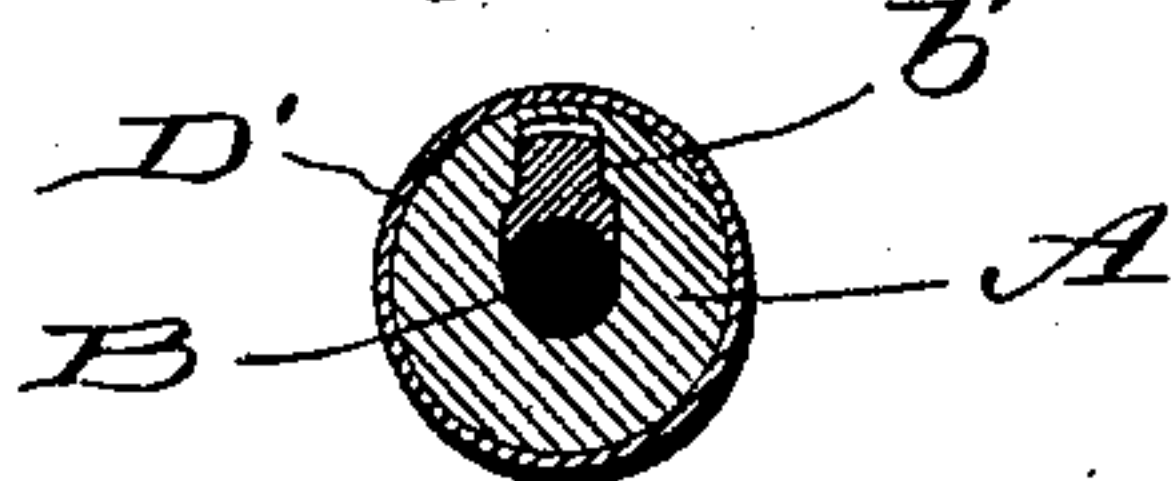
*Fig. 5.*



*Fig. 7.*



*Fig. 6.*



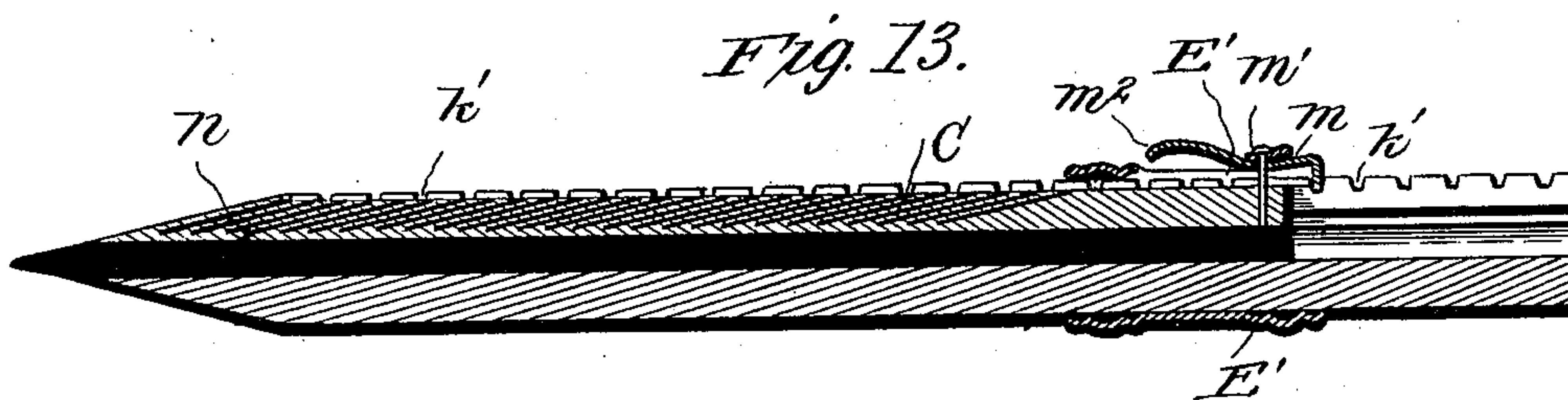
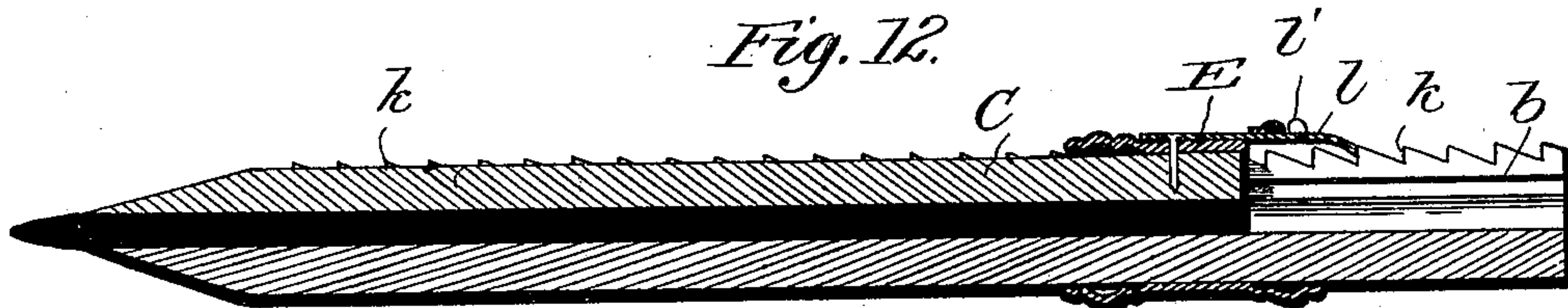
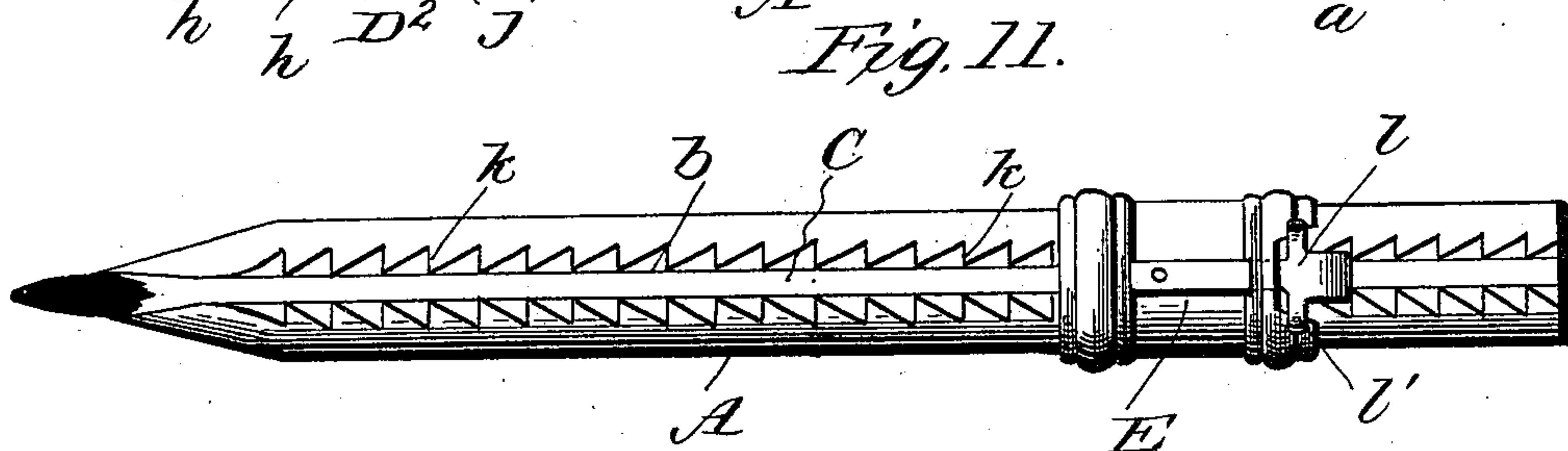
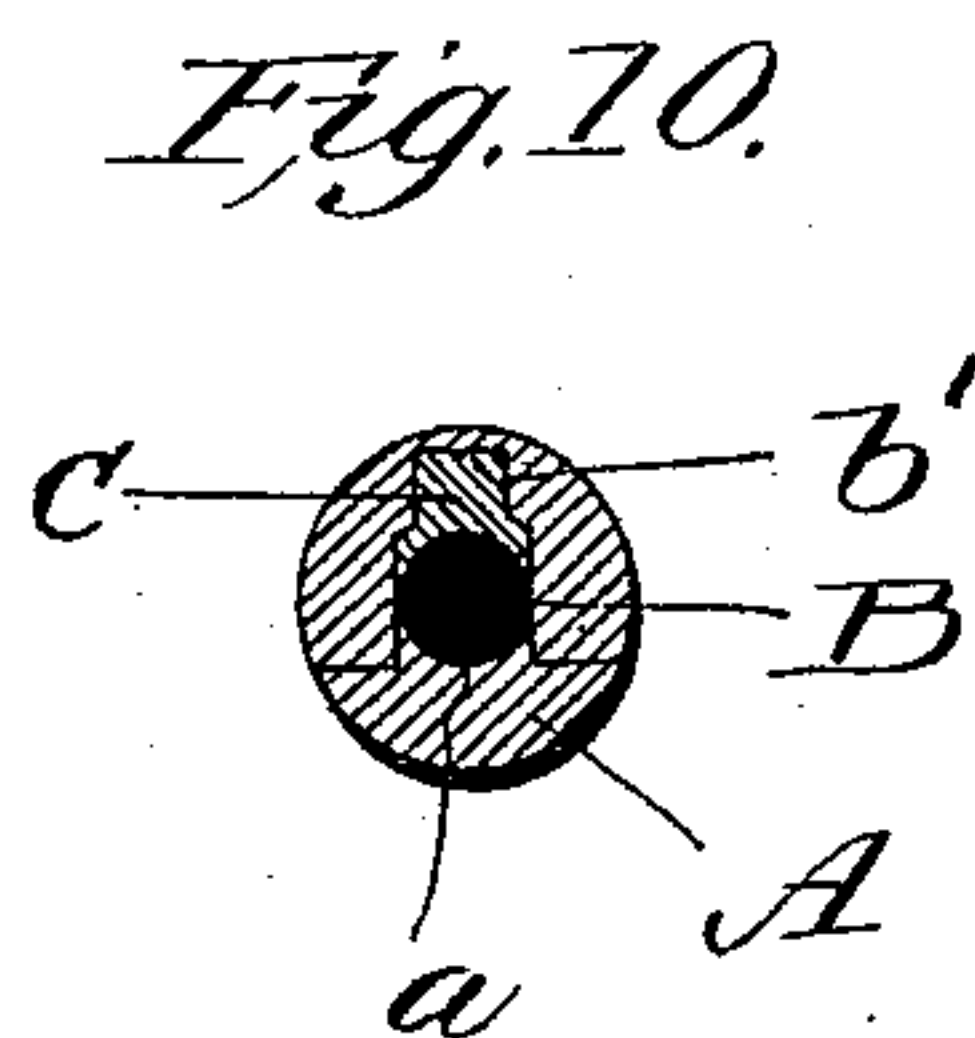
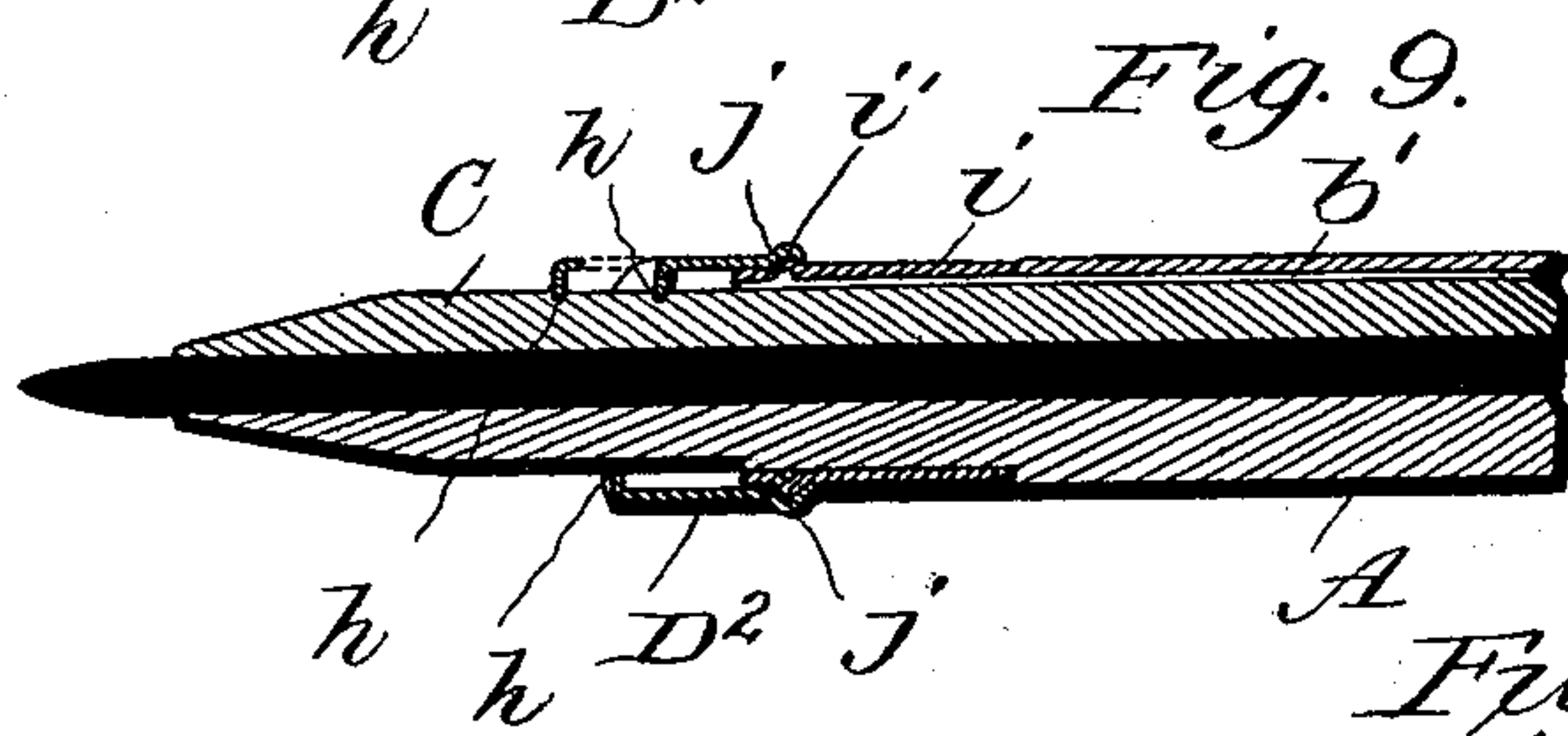
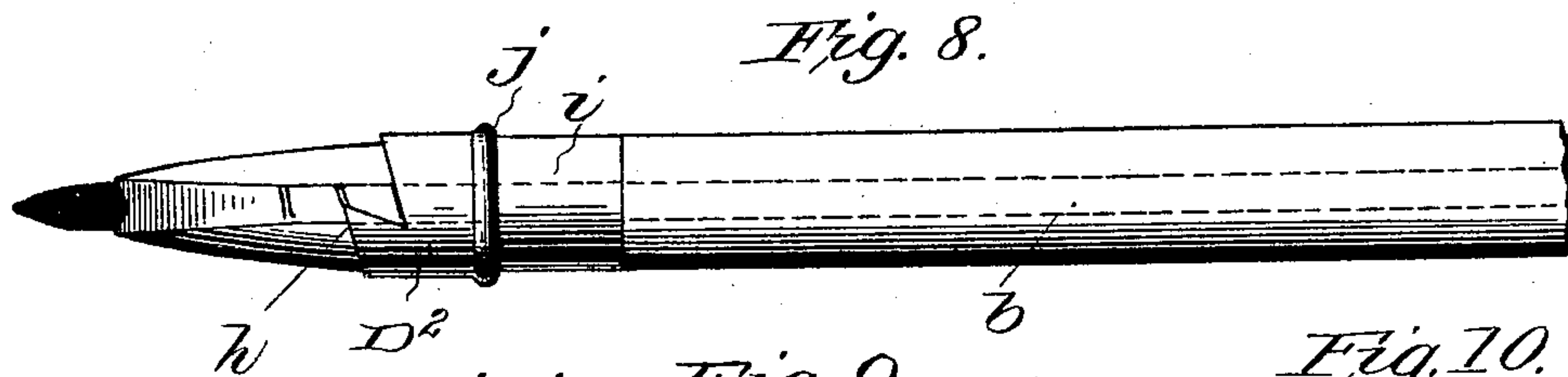
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A. KAISER.  
PENCIL.

No. 583,754.

Patented June 1, 1897.



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# UNITED STATES PATENT OFFICE.

AUGUST KAISER, OF NEW YORK, N. Y., ASSIGNOR TO THE EAGLE PENCIL COMPANY, OF SAME PLACE.

## PENCIL.

SPECIFICATION forming part of Letters Patent No. 583,754, dated June 1, 1897.

Application filed March 10, 1897. Serial No. 626,830. (No model.)

*To all whom it may concern:*

Be it known that I, AUGUST KAISER, a citizen of the United States, and a resident of New York city, in the county and State of New York, have invented a certain new and useful Improvement in Pencils, of which the following is a specification.

My invention relates to "mechanical pencils," so called—that is to say, pencils in which the lead or crayon is longitudinally movable within a sheath or holder. Pencils of this kind are open to the serious objection that when the pencil drops or strikes against a hard body the shock is very liable to break the lead or crayon. It is the purpose of my invention to obviate this objection. To this end I combine with the lead or crayon a reinforcing strip or tongue of wood or other material which can readily be cut with a knife, the two being fastened together throughout their entire length by glue or other suitable adhesive material. The tongue has provided for it in the case or sheath a groove or slot in which it fits and travels. It thus, besides supporting and reinforcing the lead, may serve as a guide for the latter; and I also may utilize it as a means of propelling the lead, as well as holding it in adjusted position, for which purpose I may combine with it means mounted on the sheath adapted to engage the tongue and through it to propel or adjust the lead to which it is attached.

The nature of my invention and the manner in which it is or may be carried into effect will be readily understood by reference to the accompanying drawings, in which—

Figure 1 is a perspective view of a pencil embodying my invention in its simplest form. Fig. 1<sup>a</sup> is a view of a portion of the same pencil with the tongue and lead protruded. Fig. 2 is a cross-section of the pencil. Fig. 3 is a view, and Fig. 4 is a cross-section on line 4 4, Fig. 3, of a modification. Fig. 5 is a view of still another modification. Fig. 6 is a cross-section on line 6 6, Fig. 5. Fig. 7 is a longitudinal section of the front end of the pencil in Fig. 5 in the plane of the reinforcing-tongue. Fig. 8 is a view of a modification in which the lead-propelling device cuts its own thread in the tongue. Fig. 9 is a longitudinal

section of the front end of the pencil in Fig. 8 in the plane of the reinforcing-tongue. Fig. 10 is a cross-section of the sheath and tongue of the pencils shown in Figs. 8 and 9. Figs. 11, 12, and 13 are views of pencils illustrative of other forms of lead propelling and adjusting devices which may be employed. Figs. 11 and 12 are respectively a plan and a longitudinal section of one form of pencil, and Fig. 13 is a longitudinal section of another form of pencil.

The case or sheath of the pencil may be made of any suitable material. I prefer, on the score of simplicity and economy, to make it of wood and have so represented it in the drawings.

In Figs. 1 and 2 the pencil-sheath A has the usual central hole *a* for the lead or crayon B, and in addition thereto has on one side a longitudinal slot *b*, which extends from end to end of the sheath and opens into the central hole *a*, the width of the slot being less than the diameter of the hole. The front end of the sheath is of the usual conical or taper form. The lead B is contained in the hole *a* and is movable lengthwise therein. A strip or tongue C, of wood or equivalent material, fits in the slot *b*, in which it can move lengthwise, and its inner edge is concave in cross-section, so as to fit closely upon the lead. It extends the length of the lead and the two are glued together. The outer edge or face of the strip or tongue is fashioned to form a continuation of the periphery of the sheath and is preferably provided with side lips *c*, which overlap slightly the edges of the slot in which it moves. The tongue guides the lead, and the lead, by the fact that it is of greater diameter than the width of the slot *b*, holds the tongue in place. When the pencil is in use, the pressure of the fingers on the tongue C will suffice to prevent it from moving backward in the sheath. When it is desired to expose a fresh portion of lead for use, all that is required is to slide the lead forward a short distance, as indicated in Fig. 1<sup>a</sup>, after which the protruding portion of the tongue can be cut away or removed until it is again flush with the conical tip of the sheath. It is only necessary under this arrangement to cut away



the tongue. The sheath itself may remain intact.

Various means may be provided for effecting the feed and adjustment of the lead. These means should engage the tongue C, the lead being actuated through the intermediary of the latter. In the arrangement shown for this purpose in Figs. 3 and 4 the tongue has in its exposed edge a series of cross-notches *d*, having the pitch of a screw-thread. The front end of the sheath in advance of the shoulder *e* is reduced in diameter, so as to permit the notched edge of the tongue to project a little, and on this reduced part of the sheath is fitted an internally-screw-threaded sleeve D, which engages the screw-notches in the tongue and is held between the shoulder *e* and a thimble *f*, (fitted on the tip of the sheath after the sleeve is put on,) so as to be incapable of longitudinal movement, while free to rotate. By rotating the sleeve the tongue, and consequently the lead, will be advanced or retracted, according to the direction of rotation.

It is not necessary that there should be an open slot *b* extending throughout the length of the sheath.

Instead of an open slot I can employ for the reception of the tongue a groove *b'*, which does not extend to the periphery of the pencil, as shown in Figs. 5, 6, and 7. At the tip of the pencil the sheath is, however, reduced in diameter, so as to open the groove and to permit the tongue to project therefrom, so as to put its notched edge *d* in position to be engaged by the propelling-screw. In this instance the screw is formed in the front end of the sleeve or ferrule D', revoluble upon the sheath, but held from longitudinal movement by an annular depression or inwardly-projecting rib *g* on it, which enters a corresponding annular groove in the sheath.

The ferrule may be provided at its front end with a spiral flange or inturned edge made sharp, so that it will cut its own thread in the tongue, in which event the preliminary notching of the tongue may be dispensed with. Such a modification is represented in the pencil illustrated in Figs. 8, 9, and 10. In the pencil shown in these figures there is fast upon the sheath a sleeve *i*, having an annular knurl *i'*. The sheath in advance of this sleeve is slightly reduced in diameter, so as to permit the outer edge of the tongue *c* to project. The ferrule D<sup>2</sup> is mounted on this sleeve, having an annular knurl *j* to engage the knurl *i'* on the sleeve, whereby it is permitted rotation, but is restrained from lengthwise movement on the sheath. The inturned spiral sharpened edge *h* of this ferrule meets and cuts into the projecting outer edge or face of the tongue C, so that as the ferrule revolves it will cut its own thread in the tongue and feed the latter, and consequently the lead which is thereto attached. In these figures (8 to 10) the form of the tongue is slightly different from that shown in the pre-

ceding figures. Its concave inner edge, which projects into the lead-hole in the sheath and to which the lead is glued, is of greater width than slot *b*, so that it cannot be pulled laterally out of the slot. In this way the lead is relieved of the duty of holding the tongue in place from lateral pull, and all strain which might otherwise come upon it from this cause is removed. The sheath itself can be made in the first instance in the manner described and claimed in my Letters Patent No. 551,288 of December 10, 1895, and then the groove *b'* can be formed therein on the side opposite to that on which the ribbed part of said sheath is located, as seen in cross-section in Fig. 10. This pencil has a groove *b'*, but in case the slot *b* is desired it has the same location, only it extends to the periphery of the sheath.

In lieu of employing as a propeller or adjusting means a sleeve or ferrule having rotary but not lengthwise movement I can employ a device which has lengthwise movement without rotation. This is exemplified in Figs. 11, 12, and 13. In Figs. 11 and 12 the edges of the sheath bordering the slot *b* are formed with ratchet-teeth *k*, and the tongue C is fast to a sleeve E, which fits and can slide lengthwise on the sheath and has a spring-pawl *l* to engage the teeth *k*. The pawl has ears *l'*, by which it can be lifted against the stress of the spring whenever it is desired to retract the lead. When the sleeve is pushed forward, the pawl will readily ride over the ratchet-teeth and by its engagement with them will prevent the lead from being pushed back when the pencil is in use; but as the pawl will not lock the lead from forward movement it sometimes happens that in cutting away the tongue the lead and tongue will be drawn forward and caused to project a greater distance than is desired. Any such contingency is avoided by the arrangement shown in Fig. 13, in which the ratchet-teeth *k* in the sheath are replaced by square-shouldered notches *k'*, and there is employed in lieu of the pawl *l* a detent *m*, spring-pressed in a direction to engage said notches and having a square end adapted to enter the same, thus holding the tongue and its lead from movement in either direction. The detent may be hinged or pivoted at *m'* to its sleeve E' and is provided with a handle *m*<sup>2</sup>, by which it may be lifted out of engagement with the notches.

The tongue, if desired, may be scored or partly cut through or otherwise weakened at intervals, as indicated at *n* in Fig. 13, so that pieces of it may be broken off and removed with the fingers instead of being cut away with a knife. The tongue itself also can be made not only of wood, but of papier-mâché or other composition or material, and while possessing the requisite strength and solidity can be easily cut with a knife.

Having described my invention and the best way known to me of carrying the same into effect, I state in conclusion that I do not



limit myself narrowly to the structural details hereinbefore set forth in illustration of the invention; but

5 What I claim as new, and desire to secure by Letters Patent, is as follows:

10 1. A pencil having in combination a case or sheath provided with a longitudinal lead-receiving hole and with a longitudinal slot or groove along one side of and communicating with said hole, a lead longitudinally movable in said hole, and a reinforcing-tongue of wood or other suitable material fitting and longitudinally movable in said slot or groove, and secured to the lead throughout its length, 15 substantially as hereinbefore set forth.

20 2. In combination with a pencil case or sheath formed with a longitudinal lead-receiving hole and a longitudinal slot or groove along one side of and communicating with said hole, a lead contained in and longitudinally movable in said hole, and a tongue of wood or other suitable material fitting and longitudinally movable in said slot or groove,

and having its inner edge or face which projects into the lead-hole and is secured to the lead, of greater width than the slot or groove, substantially as and for the purposes hereinbefore set forth. 25

3. In combination, a pencil case or sheath formed with a longitudinal lead-receiving hole and slot or groove along one side of and communicating with said hole; a lead and a reinforcing-tongue secured together and fitting and longitudinally movable in said hole and slot or groove respectively; and a lead-propelling device carried by the case or sheath and operatively connected to the tongue, substantially as and for the purposes hereinbefore set forth. 30 35

In testimony whereof I have hereunto set my hand this 4th day of March, 1897. 40

AUGUST KAISER.

Witnesses:

SAMUEL KRAUS,  
C. WM. BOMAN.