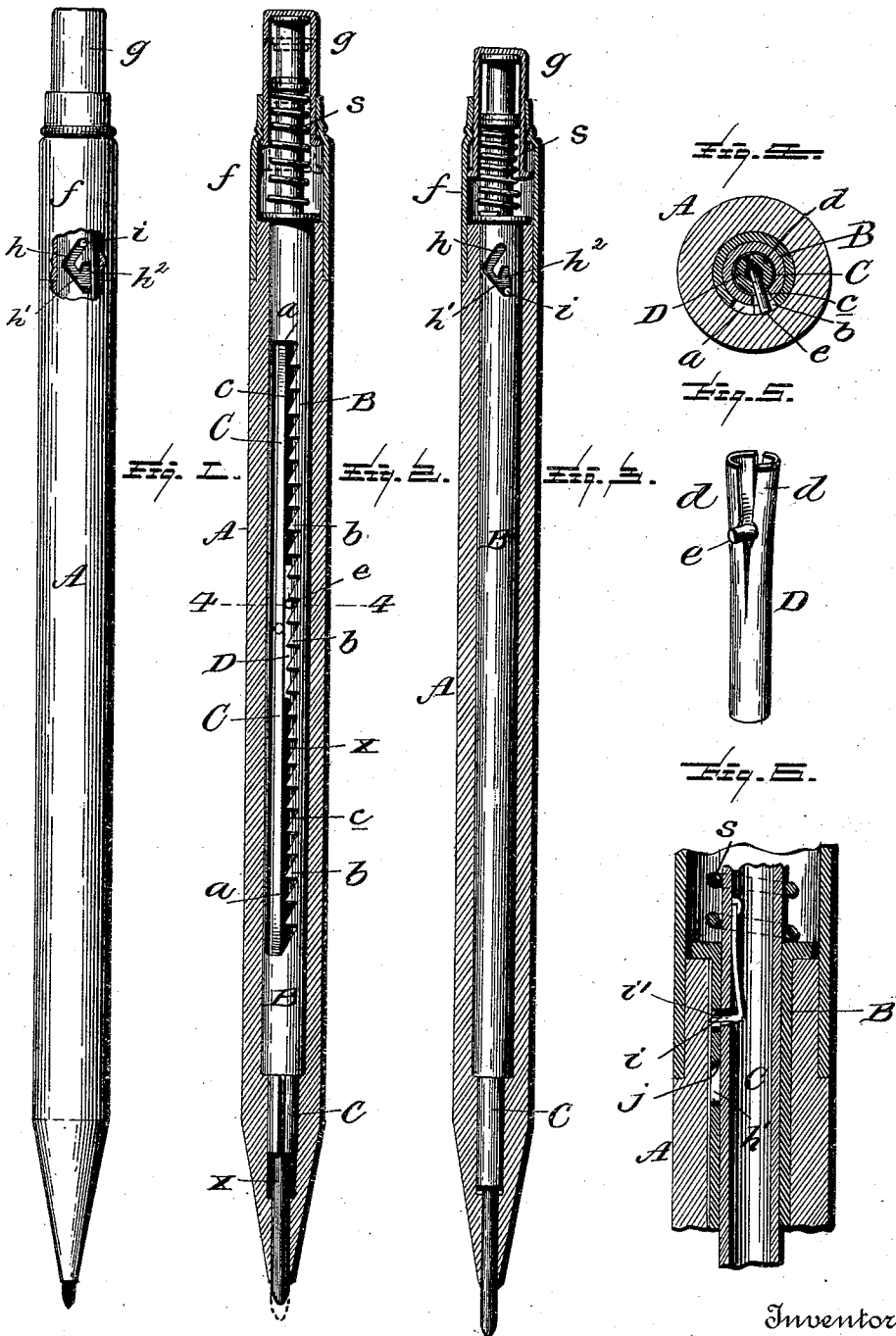


(No Model.)

C. W. BOMAN.
LEAD OR CRAYON HOLDER.

No. 484,133.

Patented Oct. 11, 1892.



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UNITED STATES PATENT OFFICE.

CLAES W. BOMAN, OF NEW YORK, N. Y., ASSIGNOR TO THE EAGLE PENCIL COMPANY, OF SAME PLACE.

LEAD OR CRAYON HOLDER.

SPECIFICATION forming part of Letters Patent No. 484,133, dated October 11, 1892.

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To all whom it may concern:

Be it known that I, CLAES W. BOMAN, of the city, county, and State of New York, have invented a new and useful Improvement in Lead or Crayon Holders, of which the following is a specification.

The holder in which my invention is embodied is one which has a step-by-step positive feed for the lead. This feature, I am aware, is not broadly new, but is found in Letters Patent No. 246,339, of August 30, 1881.

In my holder the lead is propelled by a toothed lead-follower contained in a longitudinally-slotted guide-tube, which in turn is contained in a longitudinally-slotted and toothed receiver, the tooth of the follower projecting out through the two slots in position to engage the teeth on the edge of the slot in the receiver and the two tubes, the guide-tube, and the receiver being movable longitudinally the one with relation to the other and being united by a pin and inclined-slot connection, whereby during the longitudinal reciprocation of the tubes relatively to each other there is imparted to one of them a movement of partial rotation, whereby the tooth of the follower will be brought into or out of engagement with the teeth of the receiver.

I am aware, also, that a lead-holder possessing the foregoing characteristics is not broadly new. In Letters Patent No. 234,084, of November 2, 1880, for example, there is a pin and diagonal-slot connection for bringing the toothed follower into and out of engagement with a slotted and toothed receiver, and in Letters Patent No. 237,384, of February 8, 1881, there is exhibited a lead-holder consisting of a sheath or handle, a toothed and slotted receiver, a toothed follower, and a longitudinally-slotted guide-tube which contains the follower and is itself contained in the receiver, said guide-tube and receiver being capable of longitudinal movement relatively to each other and being connected by a pin and inclined-slot connection, whereby during the longitudinal movement the one tube is given a movement of partial rotation relatively to the other for the purpose of throwing the tooth of the follower into and out of engagement with the toothed receiver.

My invention resides in the means where-

by in a pencil or holder of the kind last above referred to I am enabled both to impart to the lead or lead-follower a step-by-step forward feed, and also to bring the follower when required to such a position that the protruded lead can be pushed back within the sheath, as is desirable when the pencil is not in use. These means can best be described and understood by reference to the accompanying drawings, in which—

Figure 1 is a side elevation of that form of pencil which is the preferred embodiment of my improvement. Fig. 2 is an elevation of the mechanism with the sheath in section on the side where the longitudinal slots of the guide-tube and receiver are situated. Fig. 3 is a like view of the mechanism, with the sheath removed, on the side where the pin and inclined-slot connection between the guide-tube and receiver is situated. Fig. 4 is a cross-section on line 4 4, Fig. 2. Fig. 5 is a view of the lead-follower detached. Fig. 6 is an enlarged longitudinal section of the upper part of the guide-tube and receiver in the plane of the pin and that portion of the inclined slot in which the pin normally stands.

In Fig. 2 the parts in normal position are represented by full lines, and the dotted lines exhibit the position assumed by the parts when the spring-retracted pressure-cap is partly depressed or pushed forward.

In Fig. 3 the parts are represented in the position they assume when the cap is fully depressed to accomplish the step-by-step feed.

A is the tubular sheath or handle, which may be of any suitable size, configuration, and material. In this instance it is made of wood and resembles an ordinary wooden pencil.

B is the tubular receiver fixed within the handle. It is provided with the longitudinal slot *a*, bounded on one side by ratchet-teeth *b*.

C is the guide-tube contained within and longitudinally movable with respect to the receiver B. It has a longitudinal slot *c*. The rear end of the guide-tube, which projects beyond the sheath is surrounded by a ferrule *f*, secured to and mounted upon the rear end of the sheath, and on the end of the guide-tube is a pressure-cap *g*, which can play back

and forth in the ferrule. A retracting-spring *s*, confined, as usual, between the end of the sheath and a shoulder on the guide-tube, holds the parts in the normal position shown in Figs. 1 and 2. Within the guide-tube is a lead-follower *D*, which in this instance is a cylinder, which at its front end merely abuts against the rear end of the lead *X*, (although, if desired, it may be provided with a socket to receive the end of the lead.) It should fit somewhat snugly in the guide-tube, so as not to be loose therein, and for this purpose is provided with expanding spring or friction jaws *d*, which bear outwardly against the guide-tube and prevent the follower from moving, except when force is applied to it. A tooth or detent *e* on the follower projects out through the slot *c* of the guide-tube into the slot *a* of the receiver. The slot *c* in the guide-tube is just wide enough to permit the passage of the detent *e* without cramping, and the follower in this way will be compelled to partake of any rotary movement of the guide-tube. The slot *a* in the receiver is considerably wider than the slot in the guide-tube—wide enough, in fact, to offer a straight unobstructed passage to the follower tooth or detent when the latter is moved laterally out of engagement with the teeth *b* of the receiver. The pin and inclined-slot connection between the receiver and the guide-tube is as follows: In the receiver is what may be described in general terms as a "V-slot" *h h'*, which extends in the direction of the length of the receiver, and the guide-tube is provided with a pin *i*, which enters the slot, the normal position of this pin being at the rear end of the rear leg *h* of the V-slot. Under this arrangement, when the pressure-cap is pushed forward, by the time that it has been advanced to the position shown in Fig. 2 in dotted lines, the guide-tube will have been advanced far enough to cause the pin *i* to fully traverse the inclined leg *h* of the V-slot, with the effect of simultaneously advancing the follower *D*, (and consequently the lead,) and at the same time giving the follower through the intermediary of the guide-tube a movement of partial rotation sufficient to carry its detent or tooth *e* to one side of the row of teeth *b* and into the unobstructed portion of the slot *a*, the tooth being at the same time carried forward a distance of one tooth on the receiver. In this position the parts are shown in Fig. 2 by dotted lines. By continuing to push upon the pressure-cap the pin *i* is caused to traverse the other and oppositely-inclined leg *h'* of the V-slot, with the effect of causing a partial rotation of the guide-tube in a direction to bring the follower into engagement with the tooth on the receiver, to which it had been advanced by the preceding movement. The parts in this position are shown in Fig. 3. In this way the lead is held in its protruded position. Manifestly, however, if the V-slot were a simple

V-slot with parallel sides, then upon release of the pressure-cap the spring *s* in retracting the guide-tube would cause partial rotation of the latter, with the effect, practically, of returning the parts to the position from which they started. It is therefore necessary that upon the return movement of the guide-tube the pin *i* should travel in a straight path, so as not to impart rotation to the tube. To provide for this, I form toward the forward end of the leg *h'* of the V-slot a return-slot *h²*, having converging sides and extending back directly toward the rear end of the leg *h* of the V-slot. The pin *i* itself is spring-yielding and can play up and down in the hole in the guide-tube through which it protrudes. Its outer end is slightly beveled, as seen at *i'*, Fig. 6, and the edge of the material which bounds the upper end of the return-slot is also slightly beveled, as indicated at *j*, Fig. 6. The consequence of this arrangement is that when, after the parts have been brought to the position shown in Fig. 3, the pressure-cap is released and the retracting-spring draws back the guide-tube the pin *i* will pass back, not through the inclined slot *h' h*, but directly through the return-slot *h²*, and when it reaches the upper end of the latter it will be depressed by the action of the bevel *j* upon its outer beveled end *i'*, and consequently will ride under the solid portion of the tube intervening between that point and the rear end of the leg *h* of the V-slot, and finally passing from beneath that solid portion will snap into the rear end of the leg *h*, thus returning to normal position without having imparted rotary movement to the guide-tube. The rear end of the leg *h* of the slot has a square shoulder, against which the pin *i* will squarely abut. Even without this, however, there would be no danger of the pin passing back of this point, because the rearward movement of the pressure-cap is limited and ceases before the pin can get back beyond the end of the slot.

When after the pencil has been used it is desired to push the lead back into the sheath, all that is needed is to push the pressure-cap about half-way forward to bring the follower to the position shown by dotted lines in Fig. 2. In this position of parts the lead can be pushed back by pressure upon its outer end, after which the pressure-cap is released and allowed to resume its normal position.

I remark, in conclusion, that in lieu of the spring-yielding-pin arrangement the pin can be made rigid and the portion of the shell of the receiver under which the pin passes back can be made yielding. Such an arrangement manifestly would be the equivalent of the one first above referred to.

Having now described my invention and the manner in which the same is or may be carried into effect, what I claim herein as new, and desire to secure by Letters Patent, is—

The combination of the sheath or case, the

slotted and toothed receiver, the slotted guide-
tube longitudinally movable within the re-
ceiver, the toothed follower contained and
frictionally held in the guide-tube, the pin-
5 and-slot connection between the guide-tube
and the receiver, consisting of the V-slot h h'
and return-slot h^2 in the one part and the
spring yielding or depressible pin for engag-
ing said slot on the other part, the pressure-

cap, and the retracting-spring, substantially 10
as and for the purposes hereinbefore set forth.

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

CLAES W. BOMAN.

Witnesses:

SAMUEL KRAUS,
C. S. BRAISTED.