(No Model.)

J. APPLEBY.

LEAD OR CRAYON HOLDER.

No. 338,332. Patented Mar. 23, 1886.

Fig. 1.

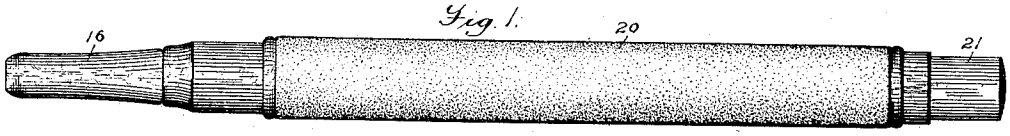


Fig. 2.

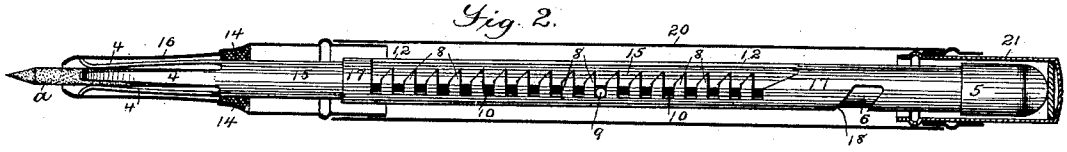


Fig. 3.

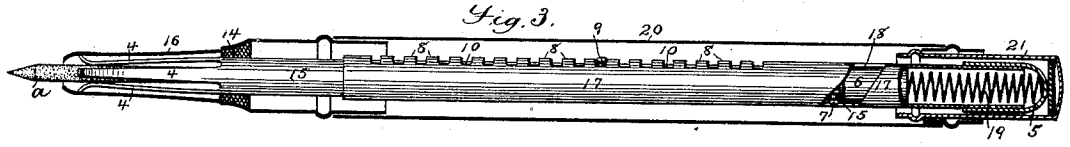


Fig. 4.

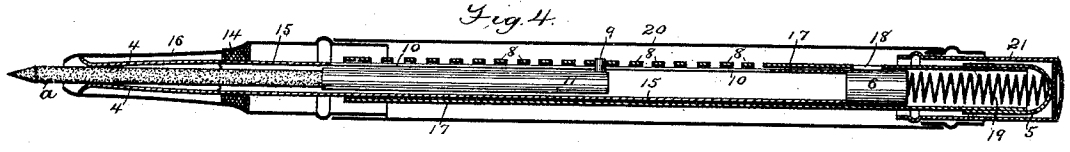


Fig. 5.

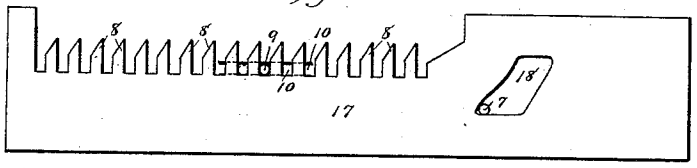


Fig. 6.

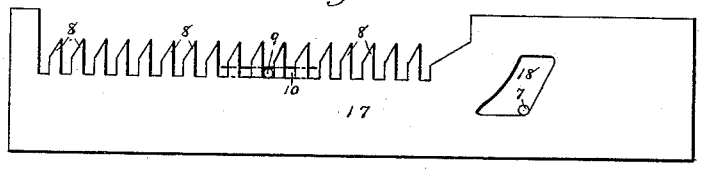


Fig. 7.

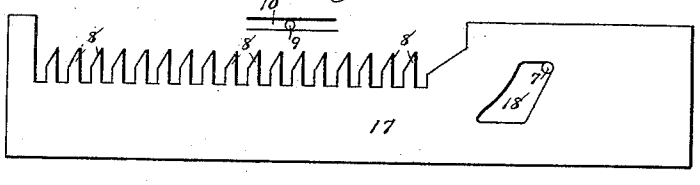
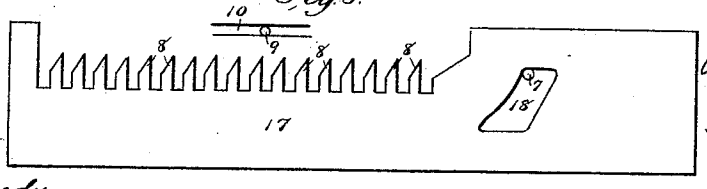


Fig. 8.



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UNITED STATES PATENT OFFICE.

JOSEPH APPLEBY, OF BIRMINGHAM, ENGLAND.

LEAD OR CRAYON HOLDER.

SPECIFICATION forming part of Letters Patent No. 338,332, dated March 23, 1886.

Application filed October 22, 1885. Serial No. 180,594. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH APPLEBY, a subject of the Queen of England, residing at Birmingham, England, have invented certain new and useful Improvements in Lead or Crayon Holders, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates that class of holders or cases for lead, crayon, or other writing material in which the writing-point is protruded from the holder with a step-by-step movement by means of feeding devices put in operation by pressure applied to some portion of the holder.

It is the object of the invention to provide a holder of this class in which the lead or other writing material after being protruded to the proper extent for use will be automatically locked or held in that position, and in which a repetition of the feeding movement will permit the writing-point to be retracted within the holder, thus making a single set of devices and the same movement accomplish all the necessary operations.

As a full understanding of the invention can be best imparted by a detailed description of the construction and operation of the holder, such description will now be given, reference being had to the accompanying drawings.

In the following description and claims the term "lead" will be used to designate the writing material, but it is to be understood that by that term is meant any form of writing material which is suitable for use in the holder.

In said drawings, Figure 1 is an enlarged view of the holder, showing the lead in its retracted position. Fig. 2 is a similar view showing the outer parts of the holder in section and the lead in its protruded position. Fig. 3 is a view taken at right angles to Fig. 2, showing the outer parts and also certain of the interior parts in section and the lead in its protruded position. Fig. 4 is a view similar to Fig. 3, showing all of the principal parts in section. Figs. 5, 6, 7, and 8 are diagrams illustrating the operation of the holder.

Referring to said figures, it is to be understood that the lead *a* is carried in a metallic tube, 15, which I term the "conducting-tube," and which is of a length sufficient to accommodate the longest lead which it is desired to use in the holder. This tube is slotted at its lower end so as to provide a number of spring-arms, 4, which bear upon the lead *a* with a pressure sufficient to prevent it from falling out of the holder, and is also provided with a longitudinal slot, 10, which extends the greater part of its length, and through which projects a pin or stud, 9, which is secured to a follower, 11, which abuts against the upper end of the lead *a* and moves freely up and down in the tube 15. The follower 11 may be either tubular or solid, as may be preferred, and will preferably be made to fit into the tube 15 just snugly enough to be prevented from moving by reason of its own weight.

Over the conducting-tube 15 there is fitted a tube, 17, which I call the "feeding-tube," and which is provided with a wide slot, 12, which coincides with and is of about the same length as the slot 10 in the tube 15, and into which projects the stud 9 of the follower 11. One side of the slot 12 is plain, while the other side is provided with a series of projections or teeth, 8. The side of each of the teeth 8 which is nearer to the top of the holder is cut square or at right angles to the slots 10 12, while the other side of each tooth is beveled at its end so as to bring the teeth to a point, as shown. The feeding-tube 17 is also provided near the upper end of the tube 15 with an oblique or winding slot, 18, of considerable width, into which projects a pin or stud, 7, which is secured to the end of the conducting-tube 15. The slot 18 is, as will be observed, wider at one end than at the other, thus making one of its sides—*i. e.*, that toward the top of the holder—less inclined than the other. The feeding-tube 17 terminates at its lower end at a point just below the end of the slot 10, but at its upper end extends beyond the tube 15.

The upper ends of both the tubes 15 and 17 are closed, the former preferably by a loose block or disk, as 6, which fits into the tube 17 and rests upon the end of the tube 15, and the latter preferably by means of a cap, 5, which fits over its end, as best shown in Fig. 4. Be-

tween the closed ends of these tubes there is located a spiral spring, 19, the tendency of which is to force the tubes apart, and thus hold the stud 7 in the lower corner of the slot 18, as shown in Fig. 3, in which position the stud 9 will be held between two of the teeth 8, and the follower 11 will be prevented from moving either up or down in the tube 15, as shown in Fig. 2.

The parts thus far described constitute the operating parts of the holder; but the holder will usually be provided with a sheath or casing, 20, which incloses the tubes 15 17, and terminates in a tapering point, 16, having an opening through which the lead passes. The casing 20 will be rigidly secured, by soldering or otherwise, to the tube 15, as shown at 14. The holder will also usually be provided with a pressure-cap, 21, which fits over the end of the tube 17, and slides freely either upon the inside or outside of the casing 20. The end of the tube 17 will preferably be rounded, as shown, so as to reduce the friction between it and the cap 21, and thus permit it to turn freely. The casing 20 and the cap 21 may be made of metal, or of any other suitable material or combination of materials.

The manner of using the holder thus constructed is as follows: When it is desired to protrude the lead for use, pressure will be applied to the cap 21, so as to compress the spring 19 and move the tube 17 along the tube 15. As this is done the stud 9, projecting between two of the teeth 8, will be moved along the slot 10, thereby moving the follower 11 and forcing the lead *a* outward. This will continue until the slot 18 has been moved from the position shown in Fig. 5 to that shown in Fig. 6, thereby protruding the lead *a* a distance equal to the width of the slot 18. As soon, however, as this is accomplished, the stud 7 will commence to act against the oblique upper side of the slot 18, so that as the pressure upon the cap 21 is continued the tube 17 will be caused to make a partial revolution around the tube 15, and thus disengage the teeth 8 from the stud 9, as shown in Fig. 7. The pressure being then removed from the cap 21, the spring 19 will retract the tube 17 until the slot 18 arrives at the position shown in Fig. 8; but the stud 9 being at this time disengaged from the teeth 8, the follower 11 will remain in the position to which it has been advanced. As the spring 19 continues to expand, the stud 7, acting against the oblique lower side of the slot 18, will restore the tube 17 to its original position, as shown in Fig. 5, but in returning to its original position the stud 9, not having been retracted with the tube 17, will be engaged by the next pair of teeth, as shown by dotted lines, and will thus be locked in its advanced position. This operation being repeated, the lead can be protruded step by step to any desired extent as it is worn away by use.

When it is desired to retract the lead within the holder so as to protect the writing-point, it is only necessary to compress the spring 19 so as to move the tube 17 to the position shown in Fig. 7, the same as in feeding the lead out. When the parts are in this position, the studs 9 not being engaged by the teeth 8, the lead and the follower 11 can be easily shoved back into the tube 15 to any desired extent. After the lead has been moved back into the holder the pressure will be removed from the spring 19. In the introduction of a new lead the operation will be the same.

The pressure of the spring-arms 4 is sufficient to prevent the lead from falling from the holder at any time, and the friction of the follower 11 in the tube 15 is sufficient to prevent the follower from moving away from the lead by reason of its own weight, if at any time the point of the holder should be elevated when the stud 9 is out of engagement with the teeth 8.

If preferred, the spring-arms 4 may be omitted and some other suitable friction device used for retaining the lead in the holder, or the lead may be attached to the follower 11. It is also to be remarked that the arrangement of the stud 7 and slot 18 may be reversed, the stud being on the tube 17 and the slot in the tube 15.

What I claim is—

1. The combination, with the follower 11, having the stud 9, of the feeding-tube 17 having the teeth 8, for engaging with the stud, and having a rotary movement whereby the teeth are brought into and out of engagement with the stud to lock and release the follower, and an independent longitudinal movement whereby the follower is advanced to protrude the lead, substantially as described.

2. The combination, with the follower 11, having the stud 9, of the conducting-tube 15, having the slot 10, through which the stud projects, and the feeding-tubes 17, having the teeth 8, for engaging with the stud, and having a rotary movement whereby the teeth are brought into and out of engagement with the stud to lock and release the follower, and an independent longitudinal movement whereby the follower is advanced to protrude the lead, substantially as described.

3. The combination, with the follower 11, having the stud 9, of the conducting-tube 15, having the slot 10, through which the stud projects, the feeding-tube 17, having the teeth 8, for engaging with the stud 9, the wide oblique or winding slot 18 and the stud 7, projecting into said slot, whereby the feeding-tube is given a rotary movement and is permitted to have an independent longitudinal movement, and the spring 19, interposed between the conducting and feeding tubes, substantially as described.

4. The combination, with the follower 11,

having the stud 9, of the conducting-tube 15, having the stud 7 and the slot 10, through which the stud 9 projects, the feeding-tube 17, having the teeth 8, for engaging with the stud 9, and the wide oblique or winding slot 18, into which projects the stud 7, and the spring 19, interposed between the conducting and feeding tubes, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JOSEPH APPLEBY.

Witnesses:

J. W. MILLIGAN,
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THEODORE D. NEAL,
Merchant's Clerk, 36 Lancaster St., Birmingham, England.