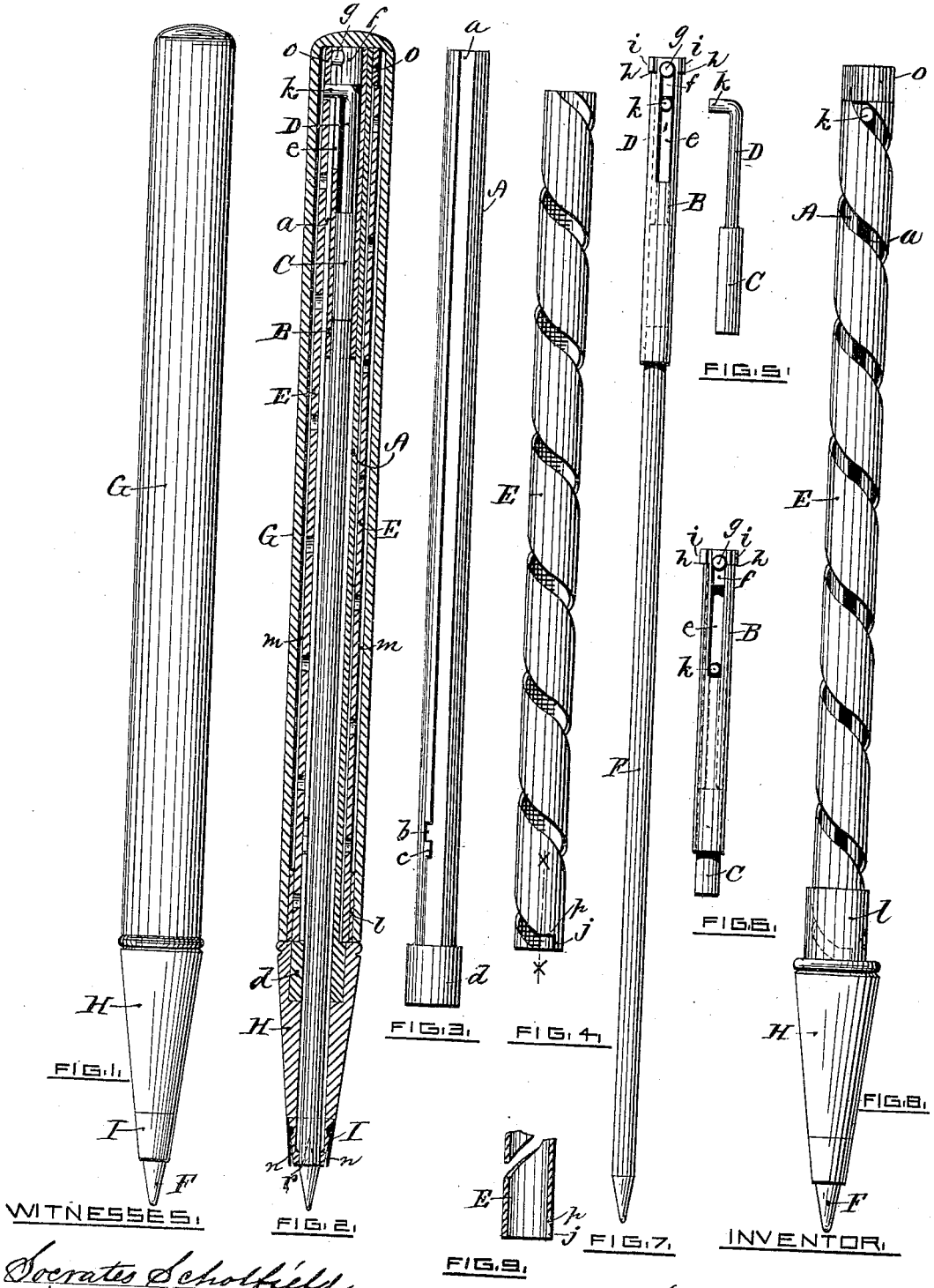
(No Model.)

A. T. CROSS.

LEAD AND CRAYON HOLDER.

No. 263,392. Patented Aug. 29, 1882.



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LEAD AND CRAYON HOLDER.

SPECIFICATION forming part of Letters Patent No. 263,392, dated August 29, 1882.

Application filed April 8, 1882. (No model.)

To all whom it may concern:

Be it known that I, ALONZO T. CROSS, of Providence, in the State of Rhode Island, have invented an Improvement in Lead and Crayon Holders, of which the following is a specification.

My invention relates to that class of lead and crayon holders where the lead or crayon is projected from the point-tube of the holder or retracted within its bore by means of screw mechanism; and it consists in the improved construction of the lead or crayon carrier, the operating hollow screw, and the slotted screw-tube, whereby the holding-stub of a used-up lead or crayon may be automatically expelled from the carrier and a fresh lead or crayon be readily inserted therein for continued used.

Figure 1 represents a longitudinal elevation of the holder. Fig. 2 represents an axial section of the same. Fig. 3 represents an elevation of the slotted screw-holding tube. Fig. 4 represents an elevation of the screw. Fig. 5 represents an elevation of the plunger for forcing the lead or crayon from the carrier. Fig. 6 represents an elevation of the carrier. Fig. 7 represents an elevation of the carrier with an inserted lead or crayon. Fig. 8 represents an elevation of the several parts of the screw mechanism as secured to each other preparatory to the final attachment of the case of the holder. Fig. 9 represents a central longitudinal section of the lower end of the screw, taken in the line *x x* of Fig. 4.

In the accompanying drawings, A is the screw-holding tube, provided with a longitudinal slot, *a*, at the lower end of which is cut the notch *b*, and the side of the slot below the notch is cut away, leaving a projecting spur, *c*, at the lower side of the notch, and on the end of the tube A is soldered the sleeve *d*.

The carrier for the lead or crayon is formed of a tube, B, provided at its upper end with a slot, *e*, and inclosing a cylindrical plunger, C, provided at its upper end with a spring, D, the upper end of which is bent at a right angle, and is made to project slightly from the slot *e* of the carrier, so as to form the pin *k*, upon which the spiral groove of the screw E may be made to act, so as to move the attached lead or crayon back and forth within the holder.

The upper end of the carrier-tube B is provided with a short plug, *f*, in which is secured the stud *g*, made of a diameter equal to the width of the slot in the tube A, and the upper end of the tube B is also provided with the transverse slits *h h*, whereby the resulting narrow wings *i i* at the sides of the tube, when bent outward, will serve to form a very slight spring by compression within the bore of the slotted tube A, thus serving to prevent the carrier-tube B from moving with too much freedom within the bore of the tube. The movement of the plunger C within the carrier is limited at its upper point, as shown in Fig. 7, by the lower end of the plug *f*, the lead or crayon F serving to force the plunger back within the carrier-tube.

The lower end of the hollow screw E is provided with a shoulder, *j*, which serves, in connection with the spring-pin *k*, to form a stop for the movement of the screw when the carrier is at the lower limit of its traverse within the tube.

Upon the lower end of the hollow screw E, and covering the shoulder *j*, is attached the sleeve *l*, which serves to secure the screw mechanism and the case or handle G of the holder to each other by means of the frictional contact of the sleeve *l* with the bore of the handle G, leaving thus an annular chamber, *m*, between the bore of the handle or case and the outer surface of the screw E.

The lower end of the conical or tapering point-tube H, which is firmly secured to the slotted tube A by means of the sleeve *d*, is provided with splits *r*, whereby the bore of the tube at the point may be made to slightly expand in order to fit leads or crayons of varying sizes, and since the employment of a split end tends to render the end of the point-tube unsightly, and the point is liable to be cut and injured by the careless use of a knife in sharpening the lead or crayon, I fit a hollow metal tip, I, over the end of the tube H, so that the upper end of the tip I will firmly clasp the tube H for a short distance, but at the extreme lower end of the tube H will leave within the bore of the tip I sufficient space *n* to allow for the desired expansion of the end of the tube upon the insertion therein of a lead or crayon. Thus by means of this improvement the undesirable appearance of the point will be removed and the point will be protected from injury from the use of a knife in sharpening. The metal tip I being first properly secured to the lower end of the tapering-point tube H, and

the point-tube firmly secured to the slotted tube A, as described, the hollow screw E is to be passed loosely over the tube A, so that the lower end of the sleeve *l* will abut against the upper end of the point-tube H, as shown in Fig. 8. The carrier B, with its plunger C, may now be inserted at the upper end of the tube A, so that the spring-pin *k* will enter the spiral groove of the screw, and the guiding-stud *g*, made shorter and larger than the pin *k*, will enter the slot *a* of the tube A, the stud *g* being made short enough to pass along the slot *a* and within the bore of the hollow screw, as shown in the section, Fig. 2. The screw E may then be secured in position by soldering or otherwise securing a collar, *o*, to the upper end of the tube A, so that the hollow screw E will be allowed to turn freely upon the tube A between the fixed collar *o* and the upper end of the point-tube H. The handle or case G may now be forced upon the sleeve *l* in order to firmly connect the handle G and screw E to each other, so that by holding the point-tube H with one hand and turning the handle G with the other the carrier B may be caused to move back and forth within the bore of the tube A, as desired, and upon screwing the carrier to its upper limit, as shown in section, Fig. 2, and forcing the lead or crayon F into the lower end of the carrier B, so as to abut against the end of the plunger C, the holder will be ready for use.

When the lead or crayon F becomes worn away the carrier B may be brought down toward the point of the holder by the above-described manipulation of the handle G and point-tube H until the stud *g* is forced into the notch *b* by the lateral thrust of the groove of the screw against the pin *k*, which will cause the carrier B to stop in its downward movement, and then the further movement of the screw to force the lead or crayon out at the point of the holder will cause the plunger C to move forward and eject the remaining unused stub of the lead or crayon. Now, upon turning the screw still farther, the spring-pin *k* will be brought against the stop-shoulder *j*, where it will be held in advance of the beveled undercut edge *p* of the end of the screw. (Shown in the longitudinal section, Fig. 9.) Then by applying the end of a fresh lead or crayon to the end of the plunger, which in this instance has reached the extreme lower end of the point of the tube H, and pressing backward on the same, the spring-stud *k*, which may be slightly rounded at its rearward corner, will be forced inward by the incline *p*, so as to pass under the inner surface of the screw, thus allowing the plunger to be forced back to its upward limit in order that the carrier B may receive the end of the lead or crayon, as before, the carrier being at this point held in position by the notch *b* and stud *g*. After the lead or crayon has been thus inserted into the carrier the screw should be turned in the required direction to draw the lead or crayon within the bore of the tube, and the initial movement of the screw in that direction will allow the pin *k* to again rise from its rearward position into the spiral groove of the screw, and then cause the stud *g* to pass out of the notch *b* to the straight side of the slot *a*, thus allowing the carrier to be brought by the further action of the screw to its upper limit of movement for operation, as before. The elongated notch made below the spur *c* in the slot of the tube A provides for the lateral movement of the stud *g* into the notch *b* without obstruction from the spring-pin *k*, which partakes of the same movement, and the spur *c* may be dispensed with in case the lower end of the carrier B is provided with a proper stop within the bore of the point-tube H.

The spring-pin *k* may be allowed to rise above the outer surface of the screw into the annular chamber *m* by beveling the upper edge of the sleeve *l* with an under-cut operating to depress the pin at that point, and to cause it to pass within the spiral groove of the screw along the inner surface of the sleeve until its limit of downward movement is fully reached.

In lead and crayon holders of this class, as heretofore constructed, it has been necessary either to remove the carrier from the holder, in order to free it from the remaining stub, or to remove the point-tube from the handle portion of the holder; but by my improvement the stub remaining in the carrier is automatically ejected, and the fresh lead or crayon is readily inserted for the continued use of the holder.

The attachment of the handle or case to the screw mechanism by means of a sleeve upon the screw, as above described, is embraced in my Patent No. 156,452, dated November 3, 1874.

I claim as my invention—

1. In a lead and crayon holder, the combination of the slotted carrier provided with a guiding-stud, and the plunger provided with a spring-pin, with a slotted screw-holding tube provided at one side of the slot with a notch serving to hold the carrier, when in its lowest position, against the forcible insertion of the lead or crayon, substantially as described.

2. In a lead and crayon holder, the combination of the slotted carrier provided with a guiding-stud, and the plunger provided with a spring-pin, with a slotted screw-holding tube provided with a notch serving to hold the carrier, when in its lowest position, against the forcible insertion of the lead or crayon, and the screw provided at its lower end with a limiting-shoulder and a beveled under-cut, whereby the spring-pin may be forced from the screw-groove to within the bore of the screw to provide for the insertion of a fresh lead or crayon and for the subsequent engagement of the spring-pin with the screw-groove, substantially as described.

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