

(No Model.)

2 Sheets—Sheet 1.

B. B. GOLDSMITH.
PROPELLING LEAD PENCIL.

No. 584,076.

Patented June 8, 1897.

Fig. 1.

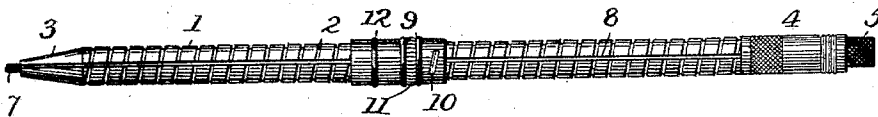


Fig. 2.

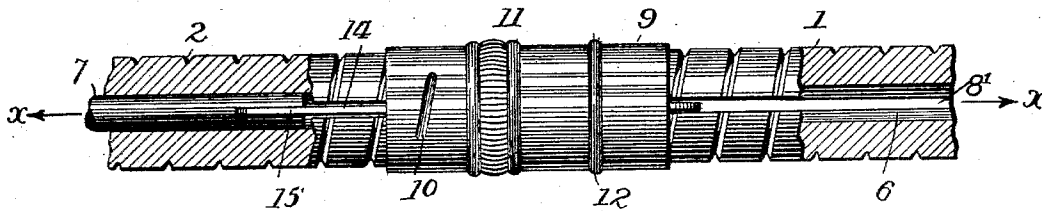


Fig. 3.

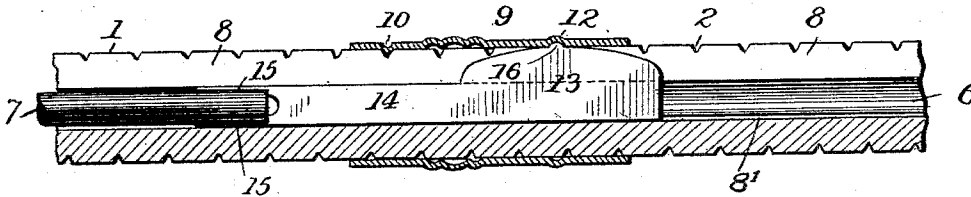
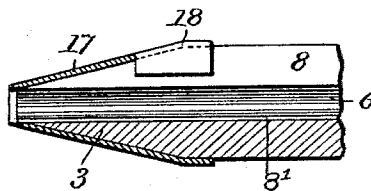


Fig. 4.



Fig. 5.



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2 Sheets—Sheet 2.

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Fig. 6.

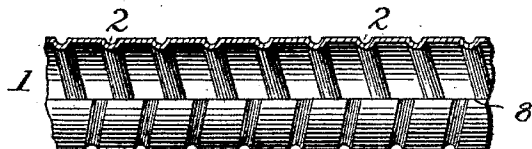


Fig. 7.

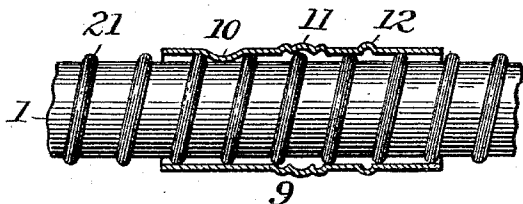


Fig. 8.

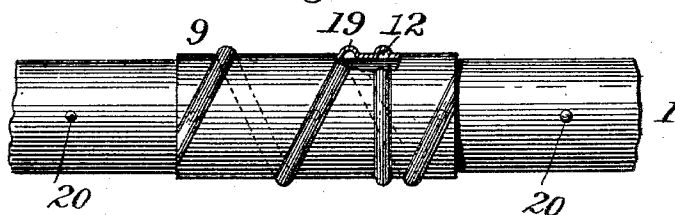
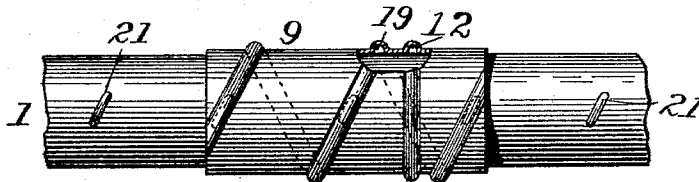


Fig. 9.



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UNITED STATES PATENT OFFICE.

BYRON B. GOLDSMITH, OF NEW YORK, N. Y.

PROPELLING LEAD-PENCIL.

SPECIFICATION forming part of Letters Patent No. 584,076, dated June 8, 1897.

Application filed June 12, 1896. Serial No. 595,323. (No model.)

To all whom it may concern:

Be it known that I, BYRON B. GOLDSMITH, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Propelling Lead-Pencils, of which the following is a specification.

This invention has reference to improvements in propelling lead-pencils in which a screw-feed mechanism is used to project the lead into position for use; and its object is to produce a cheap and efficient pencil of this character in which the parts are few in number, simple in construction, and easily and quickly assembled.

A lead-pencil made in accordance with the present invention consists, essentially, of a mantle on which is an exterior screw-thread or equivalent guide for a short sleeve or propeller on the outside of the mantle, which sleeve engages the guide and can thereby be fed along the mantle, and a lead-carrier within the mantle engaged by the sleeve and propelled longitudinally thereby.

My improved propelling lead-pencil is illustrated in the accompanying drawings, in which—

Figure 1 is a side view of the improved lead-pencil; Fig. 2, a similar view, partly in section and on an enlarged scale, of a portion of the pencil; Fig. 3, a longitudinal section on the line *xx* of Fig. 2; Fig. 4, a perspective view of the lead-carrier; Fig. 5, a central longitudinal section of the front end of the pencil; Fig. 6, a side view, partly in longitudinal section, of a modified form of the mantle; Fig. 7, a side view of another modified form of mantle, also showing the propeller in longitudinal section; and Figs. 8 and 9 are side views of other modified forms of the pencil.

Referring to the drawings, and more particularly to Figs. 1, 2, and 3, there is shown a cylindrical mantle 1, having an exterior helical groove 2 extending from the front tapering end 3 to near the rear end thereof, where the groove terminates at the usual metallic ferrule 4, the latter carrying an erasive rubber 5. As shown in Figs. 2 and 3, the mantle has an axial longitudinal bore 6, large enough to receive a marking-lead 7, and extending radially from this bore to the outer

surface of the mantle there is a longitudinal slot 8, commencing at the front end of the nozzle 3 and terminating at the ferrule 4. In the wall of the bore diametrically opposite the slot 8 there is formed a longitudinal shallow groove 8', coextensive with the slot. Surrounding the mantle there is a short sleeve or exterior lead-propeller 9, having near one end a short inwardly-projecting rib 10 set at an angle, so as to conform to the helical groove 2. This rib 10 enters the groove 2, and when the sleeve 9 is turned around the mantle it will be propelled forward or backward, according to the direction of rotation, the groove 2 and rib 10 coacting as a screw-feed for the propeller 9. In order to facilitate the manipulation of this sleeve, there is a milled annular rib 11 formed on it. The sleeve has also formed in it at the end opposite to that in which the rib 10 is formed an interior annular groove 12, the purpose of which will presently appear.

Within the bore 6 of the mantle there is a lead-carrier (best shown in Figs. 3 and 4) and consisting of a flat metal strip 13, having a prolongation 14 of less width, which is forked so as to form two opposing prongs or jaws 15, all made in a single piece and preferably stamped out of a piece of sheet metal. The lead 7 has its butt-end forced between the jaws 15, where it is held with sufficient friction to prevent it from being loosened by any ordinary use to which the pencil is subjected. The lower edge of the lead-carrier travels in and is guided by the groove 8' in the wall of the central bore 6 opposite the slot 8, and the plate 13 enters the said slot and has formed on its upper edge a short tooth 16, which projects into the interior groove 12 in the sleeve 9. It will now be seen that when the sleeve 9 is rotated, and consequently fed in one direction or the other by the cooperation of the groove 2 and rib 10, the lead-carrier will be moved longitudinally in the mantle, being prevented from turning with the sleeve 9 by the slot 8 and groove 8', and the lead will be projected into position for use or withdrawn into the mantle, according to the direction of rotation of the sleeve.

By forming the lead-carrier as described and providing the mantle with the slot 8 and groove 8', into both of which the carrier ex-

tends, I am enabled to make the bore 6 only large enough to receive the lead easily and at the same time support it along its entire length.

5 Heretofore lead-carriers have been made tubular and the central bore was made considerably larger than the lead, so as to receive the carrier, while the front end of the bore was contracted to fit the lead. The lead
10 was therefore only supported at the front and rear and would easily break if the pencil accidentally fell. By my construction I obviate this objectionable feature entirely, since the lead is supported at all points throughout its length. It will also be seen that the
15 lead-carrier is always locked against movement from the pressure used in writing by the rib 10 engaging in the groove 2.

In the form of pencil shown the slot 8 extends to the extreme forward end of the nozzle, and in this instance the lead-carrier may be inserted at the front end and the propeller-sleeve slipped over it. By this construction the strength of the mantle at the front
20 end is slightly impaired, so that the pressure of the hand applied to the mantle in the act of writing may sometimes force the walls of the slot together, while the pressure of the lead in the act of writing might force the
25 walls of the slot apart. This may be avoided by using a conical sleeve 17, (shown in Fig. 5,) which may be secured over the nozzle 3 in the usual manner, and this sleeve may have an inwardly-projecting portion 18 extending
30 into the slot 8 and just filling the same. With the use of such sleeve either the collapsing or the expanding of the forward end of the holder is prevented. It is evident that the slot 8 need not extend through the nozzle,
35 in which case, however, it must extend through the rear end of the mantle, and in such case the ferrule 4 will be provided with the little plate or block 18, which is now shown as a part of the nozzle-sleeve 17. This
40 or some similar means for preventing the collapsing or expanding of either the front or the rear end of the mantle, while useful, is not really essential.

The mantle may be made of various materials, and in the form set forth in the foregoing description it may be assumed that it is made of wood, in which case the helical groove 2, which constitutes the guide for the sleeve 9, may be formed by a suitable tool in
55 any well-known manner. If, however, the mantle is made of any material that may be molded into shape—such, for instance, as hard rubber or celluloid—the groove 2 may be formed directly by the mold.

60 The mantle may also be formed of metal, in which case the walls may be quite thin, as indicated in Fig. 6, and the groove 2 may be spun or pressed into the exterior surface of the mantle in any well-known manner.

65 I am not necessarily confined to the use of a helical groove to feed the sleeve 9, since I may form on the exterior of the mantle a

helical ridge 21, as shown in Fig. 7, and the inwardly-projecting rib 10 on the sleeve 9 may enter between two adjacent turns of this ridge, which in such case performs the function of the groove 2. This ridge 2' may be molded or spun on the mantle, according to the materials used in the construction of the same, or it may consist of a flexible strip
75 wound around the mantle and secured thereto in any suitable manner.

In Figs. 8 and 9 I have shown the sleeve or propeller 9 provided with an interior helical groove 19, extending from end to end of the sleeve, and on the mantle there is formed a line of pins or projections 20, as in Fig. 8, or short inclined ridges 21, as in Fig. 9, spaced and shaped to conform to the groove 19 in the sleeve. It will be seen at once that if
85 the sleeve be rotated and the mantle held fast, or, what is the same thing, if the sleeve be held fast and the mantle be rotated, the sleeve will be fed along the mantle by the pins or projections 20 or ridges 21 engaging
90 in the groove 19. The pins 20 or ridges 21 may extend from the nozzle 3 to the ferrule 4 in a straight line, or may be otherwise arranged, as desired.

In applying the sleeve 9 to the mantle it is immaterial whether the rib 10 is toward the front or rear end of the pencil. In Fig. 1 I have shown this rib toward the rear of the pencil, while in Figs. 2 and 3 it is shown toward the front end of the pencil. Nor is
95 it necessary that the guide 2 extend the whole length of the mantle, since it need extend only so far as necessary to cause a lead of the length used with the holder to be withdrawn entirely into the same; but in order
100 that the longest lead possible be used with the holder the guide should extend approximately the whole length of the same.

My invention is not confined to any particular screw mechanism for feeding the propeller or sleeve 9 along the mantle so long as the said screw-feed is exterior to the mantle. By my invention I am enabled to construct a propelling lead-pencil of the screw-feed type characterized by extreme simplicity
115 and cheapness of structure and not easily injured.

Having thus fully described the invention, what I claim, and desire to secure by Letters Patent, is—

1. A propelling lead-pencil comprising a mantle having a longitudinal slot in one side and a helical groove on its outer surface, a sleeve or propeller on the outside of the mantle, having an interior annular groove near
125 one end, and near the other end an inwardly-projecting rib conforming to and entering the helical groove, and a lead-carrier in the mantle having a part projecting through the slot and entering the annular groove in the
130 propeller, substantially as described.

2. In a propelling lead-pencil, a lead-carrier within the pencil-mantle, consisting of a flat plate of metal formed at one end into two

opposing jaws for holding a marking-lead, and widened at the other end for engagement with the propelling mechanism, of the pencil, substantially as described.

5 3. A propelling lead-pencil, comprising a mantle having a longitudinal slot in one side and a longitudinal groove in the wall of the bore of the mantle opposite the slot, a lead-carrier within the mantle guided by the slot
10 and groove, and propelling mechanism for the lead-carrier exterior to the mantle, substantially as described.

15 4. A propelling lead-pencil, comprising a mantle having a longitudinal slot in one side and a longitudinal groove in the wall of the

bore opposite the slot, a lead-carrier consisting of a flat plate with one end formed to grasp a lead and the other end widened to project into and through the slot, and propelling mechanism exterior to the mantle and engaging the lead-carrier, substantially as described. 20

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

BYRON B. GOLDSMITH.

Witnesses:

E. EUFEISSENBORN,
KATHARINE E. FINN.