

(No Model.)

C. W. BOMAN.
PENCIL.

No. 554,212.

Patented Feb. 4, 1896.

Fig. 1.

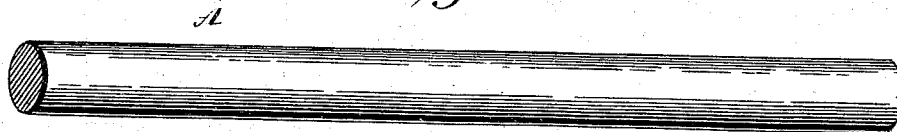


Fig. 2.

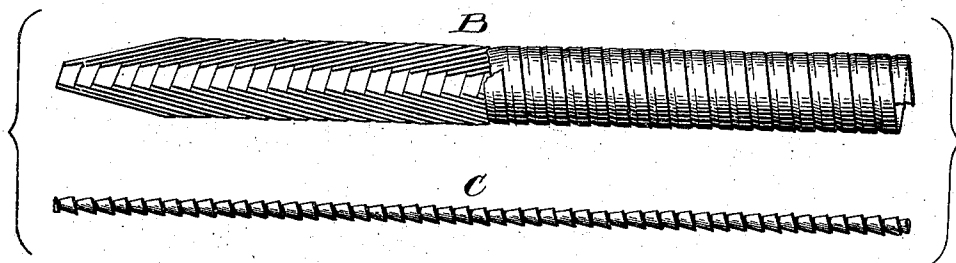


Fig. 3.

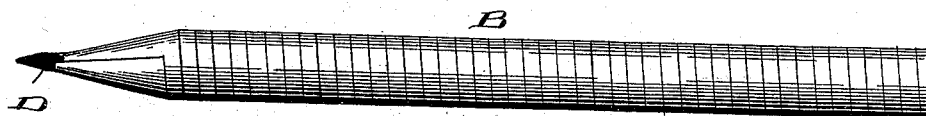


Fig. 4.

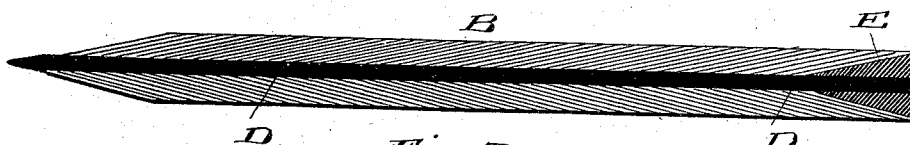
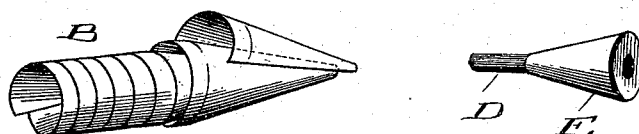


Fig. 5.



Witnesses:

L. C. Hills.
F. B. Steyer.

Inventor:

C. W. Boman
by Marcus Bailey
his Atty.

UNITED STATES PATENT OFFICE.

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

PENCIL.

SPECIFICATION forming part of Letters Patent No. 554,212, dated February 4, 1896.

Application filed November 18, 1895. Serial No. 569,320. (No model.)

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 certain new and useful Improvements in Pencils, of which the following is a specification.

My invention has relation to that class of pencils in which the sheath is composed of laminae of paper, wood, or other material, so arranged and put together that successive layers of the material can be torn off or removed with the fingers to expose fresh portions of the lead or other marking material as the latter wears away in use. Various pencils of this general kind have heretofore been proposed and some of them have been put into more or less successful use.

The pencil which I have produced has a sheath composed of a thin continuous fillet, strip, or shaving of a suitable material—such, for example, as wood—which has the form of a helix, the nested folds of which are oblique to the axis of the helix, their angle of obliquity determining the taper of the point. The lead is contained and held within the helix, and the nested folds of the helix are externally finished and held together in any suitable way—as, for example, by a thin glue or varnish or by a thin wrapping of paper or the like. By unwinding and removing the thin folds of the helix from the front end of the pencil the lead can be exposed to any desired extent, and fresh portions thereof can be exposed as the lead wears away by use.

In carrying out my invention I prefer to proceed as follows: I first take a solid stick of wood which has the shape or approximately the shape of the finished pencil. This stick I then soften thoroughly by steaming, as in the manufacture of wooden veneers, this being done in order to get the wood into a condition in which it may be cut into thin shavings by cuts crosswise of the grain if need be, without danger of breaking the shaving or fillet. After the stick has been thus thoroughly softened I proceed to cut it into a thin shaving or fillet of helical form, the folds of which are oblique to the axis of the helix. This operation is conveniently performed by putting the stick in a lathe, where it is revolved, and by acting on it with

a cutting-tool, which is at the proper angle to the stick to make a cut of the obliquity required to form the taper to be imparted to the pencil-point. This tool preferably is so set that at the inner point of its cutting-edge, or that point of the edge nearest the axis of the stick, it does not extend quite to the center or axis of the latter, thus leaving in the center of the stick a solid uncut core which separates from the helix and leaves in the axis thereof a longitudinal hole to receive the lead.

Suitable feed mechanism is used to give the tool a slow movement lengthwise of the stick during the cutting operation, the rate of feed movement being governed by the thickness which the fillet or shaving cut from the stick is to have. By this operation a thin helical fillet, strip, or shaving in one continuous length is obtained, which, when its folds are nested together, forms a sheath having an axial hole or passage through it for the reception of the lead, said folds being oblique or inclined to the axis of the helix. I have thus defined the said fillet, strip, or shaving in the claims appended to this specification; but the surface of the fillet or shaving developed by the cutting operation may be otherwise defined, and perhaps more accurately so from a mathematical standpoint, as a surface generated by a line intersecting an axis at a fixed angle oblique to the axis, the point of intersection moving uniformly along the axis while the line revolves about the axis uniformly; or, in other words, it is a machine-screw surface having a small pitch and an angle of inclination such as desired for the taper-point of the completed pencil.

After the insertion of the lead, which can be secured in place by glue or other suitable means, the pencil is finished exteriorly in any desired way, the helical folds of the continuous shaving or fillet being tightened around the lead and held together by any suitable means. The surface of the sheath, for example, can be coated with a thin glue solution or varnish and finished in like manner as any other pencil; or a thin wrapper of paper can be applied, perforated at suitable distances apart so as to permit portions of it to be readily torn off when a new point is

needed. Other ways of finishing the sheath, such as will readily suggest themselves to those skilled in the art, can be employed.

In the drawings accompanying and forming part of this specification, and to which reference will now be made for a more complete understanding of my invention, Figure 1 is a view of the solid wooden stick A, from which the helix is cut. Fig. 2 represents at B, in elevation and axial section, the helically-cut continuous shaving or strip produced in the manner hereinbefore set forth from the stick, and at C the wooden core left by the cutting operation. In this figure the folds of the helix which stand at such angle of obliquity or inclination to the axis of the pencil as required for the taper of the pencil-point are partly but not tightly nested together. Fig. 3 is an elevation, and Fig. 4 is an axial section, of the completed pencil, showing also in perspective detached the conical plug E, to which the rear end of the lead is attached. Fig. 5 is a perspective view designed to illustrate more clearly the peculiar helical formation of the fillet or shaving B.

In Figs. 3 and 4 the sheath is shown at B, and the lead at D. As hereinbefore said, the lead can be glued into the sheath alone; but sometimes I prefer to secure it also to a cone-shaped plug E of wood or some other suitable material, which is glued into and fills the conical recess in the rear or upper end of the pencil, as shown in Fig. 4.

It will be noted that in this pencil to expose the lead all that is needed is to unwind the fillet or shaving from the point end of the pencil for a suitable distance and then break it off, an operation which can readily be performed with the fingers. Pliable or flexible material other than wood may be employed; but I prefer the latter on the score of cheapness and ease of manufacture. When thoroughly steamed and softened, the wood is in admirable condition for being operated on, and the fillet, band, or shaving produced by the cutting operation can under these conditions be manipulated with ease and safety.

In conclusion I state that I am aware that it is not new to inclose a marking lead or crayon in a roll of flexible material. A pencil of this kind is described in British Patent No. 1,415 of 1862, and also in expired United States Letters Patent No. 157,881, of December 15, 1874. Nor is it new to make the pencil-sheath of a series of conical or tapering tubes of paper or other material nested or packed one within the other, for that also is described in said Let-

ters Patent last named, and also in expired Letters Patent No. 191,816 of June 12, 1877. I am also aware that a sheath has been formed of a sheet of flexible material rolled up to inclose the lead, and weakened at intervals along lines extending crosswise of the sheet, to permit successive strips to be torn off from said sheet in order to expose fresh portions of the lead. A sheath of this character is described in Letters Patent No. 461,911 of October 27, 1891. I am also aware that it is not new to inclose the lead in a sheath, from which sections in the form of a conical helix may be removed one by one, so as to uncover the lead section by section, whether said conical helices be formed of cord, as in Letters Patent No. 238,908 of March 15, 1881, or of bands or strips of paper connected together along their longer edges, as in Letters Patent No. 461,911, above referred to. I am also aware that it has been proposed to make handles or holders for pens and other articles from a strip of paper, wood, or other flexible material wound up or coiled after the fashion of the ordinary spill or lamplighter. I claim none of these things; but

What I do claim herein as new and of my own invention is as follows:

1. A pencil having a case or sheath formed of a helix composed of a strip, or shaving having its folds oblique or inclined to the axis of the helix and nested or packed one within the other, substantially as and for the purposes hereinbefore described.

2. A pencil having a case or sheath formed of a helix composed of a strip, or shaving, having its folds oblique or inclined to the axis of the helix and nested or packed one within the other, and formed so that when thus nested there will remain in the interior an axial hole for the reception of the lead or marking material, substantially as set forth.

3. A pencil case or sheath formed of a helix B composed of a strip, or shaving, having its folds oblique or inclined to the axis of the helix and nested or packed one within the other, in combination with the lead D, and the conical or tapering plug E secured to the lead, and seated in the upper or rear end of the sheath, as hereinbefore set forth.

In testimony whereof I have hereunto set my hand this 16th day of November, 1895.

C. W. BOMAN.

Witnesses:

EMIL BERALZHEIMER,
SAMUEL KRAUS.