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PENCIL LEAD SHARPENING DEVICE

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FIG. 1.

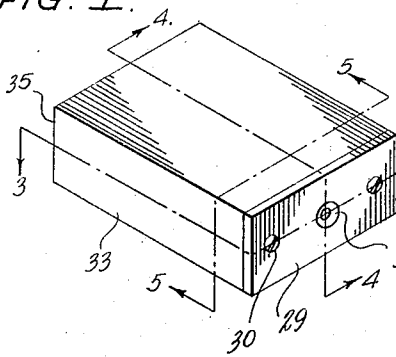


FIG. 2.

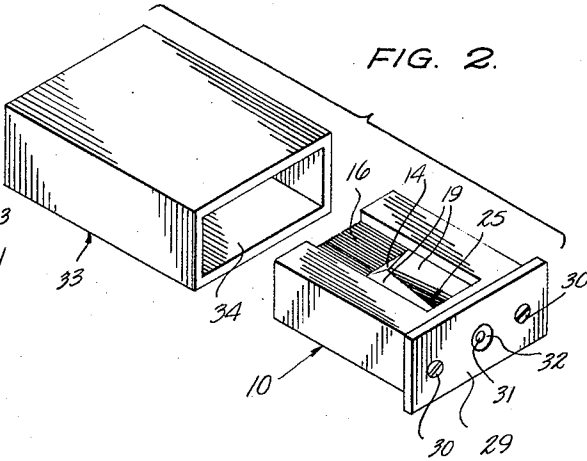


FIG. 3.

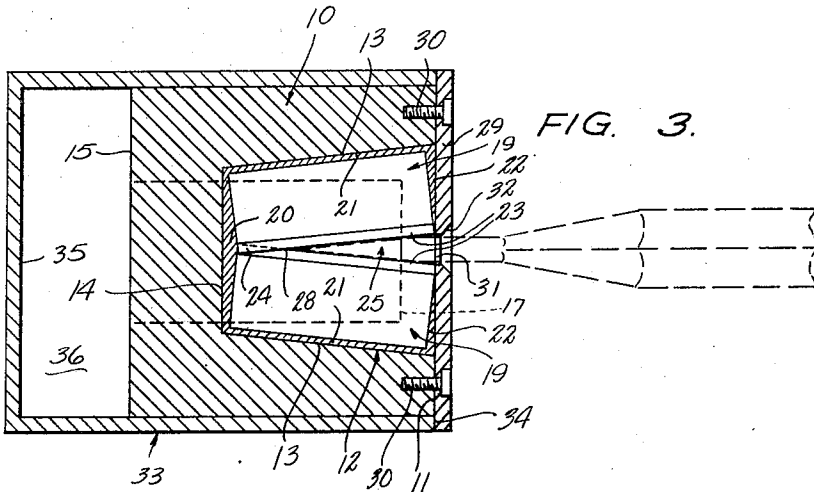


FIG. 4.

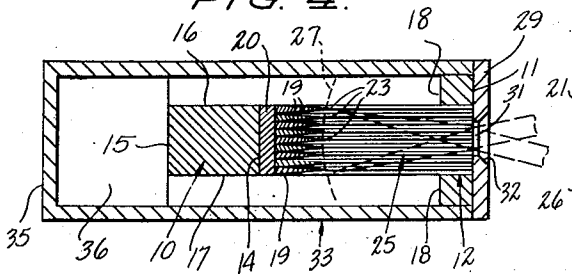
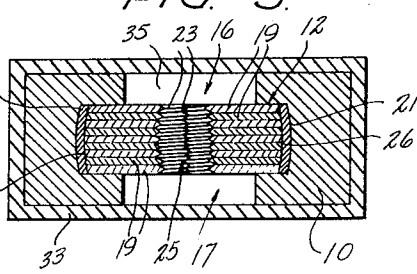


FIG. 5.



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PENCIL LEAD SHARPENING DEVICE

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2 Claims. (Cl. 120—90)

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My invention relates to a pencil lead sharpener or pointer.

A primary object of my invention is to provide a device particularly well adapted for use by draftsmen in forming new, fine points upon the leads of their pencils with a minimum of effort and in the shortest possible time.

A further object of the invention is to provide a pencil sharpening device which is highly simplified, compact, sturdy in construction and cheap to manufacture.

A further object is to provide a pencil sharpening device of the above-mentioned character which comprises a minimum number of parts.

A further object is to provide a device of the above-mentioned character which is so constructed that it is substantially self-cleaning in use, and which includes a large chamber for containing shaved graphite formed during the sharpening of the pencil leads.

A still further object of my invention is to provide a device of the above-mentioned character which is extremely easy to use, portable and time-saving; the size of the device being such that it may be readily held in one hand during the sharpening or pointing of a pencil.

Other objects and advantages of the invention will be apparent during the course of the following description.

In the accompanying drawings forming a part of this application, and in which like numerals are employed to designate like parts throughout the same:

Figure 1 is a perspective view of a pencil sharpener or pointer embodying my invention;

Figure 2 is an exploded perspective view of the same;

Figure 3 is an enlarged horizontal sectional view taken on line 3—3 of Figure 1;

Figure 4 is an enlarged central vertical longitudinal sectional view taken on line 4—4 of Figure 1; and

Figure 5 is an enlarged transverse vertical sectional view taken on line 5—5 of Figure 1.

In the drawings, where, for the purpose of illustration, is shown a preferred embodiment of my invention, the numeral 10 designates generally an inner, rectangular body portion or block which is preferably flat, thin and somewhat elongated, as shown. The block 10 is provided centrally in its forward end 11 with a main blade-holding recess 12, this recess having longitudinally, rearwardly converging vertical sides 13, and an inner or rear vertical end 14 which is narrower than the forward open end of the main recess 12.

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As shown clearly in the drawings, the main recess 12 is located centrally between the opposite longitudinal side edges of the block 10 and between the top and bottom flat faces of the block.

The rear end 14 of the main recess 12 is disposed a substantial distance longitudinally forwardly of the inner or rear end 15 of the block 10.

The block 10 is further provided in its top and bottom faces with opposed, elongated, shallow, rectangular recesses or grooves 16 and 17, and these recesses 16 and 17 extend through the rear end 15 of the block, Figures 2 and 4. The forward portions of the recesses or grooves 16 and 17 intersect or lead into the top and bottom, respectively, of the main recess 12, see Figures 2, 4 and 5. The grooves 16 and 17 are positioned midway between the opposite longitudinal side edges of the block 10, and the grooves are transversely narrower than the main recess 12, as shown clearly in Figure 5. The forward ends 18 of the recesses or grooves 16 and 17 are disposed longitudinally rearwardly of the forward end 11 of the block 10.

Opposed stacks of thin cutting blades 19 such as used safety razor blades, are removably mounted within the main recess 12 of the block 10. The stacks of blades 19 are arranged in rearwardly, longitudinally converging relation, Figure 3, and the stacks are permanently soldered together as a unit by a band of solder 20 at the rear ends of the stacks of blades. The blades 19 of each stack are further secured together in assembly by longitudinal side strips 21 of solder and by forward end strips 22, as shown. The blades 19 of each stack include inner, opposed, beveled, longitudinal cutting edges 23, and the cutting edges 23 of each stack converge longitudinally rearwardly, so that the rear portions of the cutting edges of the blades in each stack overlap and interfit, as shown at 24 in Figure 3. The forward ends of the stacks of blades 19 are spaced apart transversely, so that a rearwardly longitudinally tapered or wedge-shaped passage 25 is formed between the opposed stacks of blades. The forward corners of the cutting edges 23 of the stacks of blades are disposed substantially flush with the forward end 11 of the block 10, Figure 3. As shown in Figure 5, the outer longitudinal edges of the blades 19 in each stack of blades lie along slightly curved or arcuate lines 26, and the blades are soldered together in this position, as shown. This arcuate arrangement of the longitudinal side edges of the blades causes the beveled cutting edges 23 of the blades in both stacks to be disposed upon a slightly arcuate or curved

line 27 at the point of crossing 28 of the cutting edges 23, Figure 3. In other words, the rear end or apex of the tapered passage 25 is slightly arcuate in the generally vertical direction, Figure 4. The tapered passage 25 between the stacks of blades 19 is relatively narrow, but wide enough to receive the lead of a pencil which is to be sharpened or pointed. When the stacks of blades have thus been soldered together to form a rigid, unitary assembly, the stacks are inserted into the main recess 12 through the forward open end thereof. The stacks of blades fit snugly within the main recess 12, and extend for its entire length and width, and between its top and bottom, as shown. The converging side edges of the blades 19 are parallel to the converging sides 13 of the main recess 12. The tapered passage 25 extends from the top to the bottom of the opposed stacks of blades, and the tapered passage is open at its forward end, as shown.

As shown clearly in Figures 2, 3 and 4, when the stacks of blades 19 are positioned within the main recess 12, the major portion of the tapered passage 25 overlaps and lies between the top and bottom grooves 16 and 17. This arrangement permits graphite shavings which are formed by the cutting edges 23 to pass out of the top and bottom of the tapered passage 25 and into either of the grooves 16 or 17.

When the stacks of blades 19 have been positioned within the main recess 12, a forward, flat, rectangular cover plate 29 is secured to the forward end 11 of the block 10 by means of screws 30 or the like. The heads of the screws 30 are preferably flush with the forward face of the cover plate 29, as shown. The opposite ends of the cover plate 29 project slightly beyond the opposite side edges of the block 10, and the top and bottom edges of the cover plate likewise project slightly above and below the top and bottom faces of the block 10, as shown. The cover plate 29 extends over the forward, open end of the main recess 12, and abuts the forward ends of the stacks of blades 19, Figure 3, and aids in positioning the blades within the main recess 12. The cover plate 29 is provided at its transverse and longitudinal centers with a single small opening 31 having a diameter sufficient to accommodate an unsharpened pencil lead therein. The outer end of the opening 31 is preferably beveled or countersunk, as shown at 32. The diameter of the opening 31 is equal to the width of the forward open end of the tapered passage 25.

An outer, removable, rectangular casing 33 is provided, and this casing is open at one end, as shown at 34. The casing 33 includes a closed rear end 35, spaced from the rear end 15 of the block 10 in assembly, to form a large graphite-collecting chamber 36. The casing 33 further includes a flat top and bottom, as well as opposed vertical sides, all integrally connected, as shown. When the stacks of blades 19 and the cover plate 29 have been mounted upon the block 10, as previously described, the rear end of the block is inserted within the forward open end 34 of the outer casing, and the block is forced inwardly until the marginal portions of the cover plate 29 contact the forward end of the casing. When this occurs, the end 15 of the block will be spaced forwardly at the end 35, for forming the chamber 36, as previously stated. The block 10 preferably has a snug fit within the casing 33, but is readily removable so that the graphite shavings in the chamber 36 may be emptied, from the forward open end 34.

In use, with the parts assembled as shown in Figure 1, the unsharpened pencil lead is introduced through the small opening 31 into the tapered passage 25. The pencil is now preferably swung away from the longitudinal center line of the passage 25, so that the lead to be sharpened is disposed at an angle or diagonally with respect to the cutting edges 23, Figure 4. The pencil is now rotated a few turns upon its longitudinal axis, and the cutting edges 23 will provide a rough but quick point. In order to finish sharpening the pencil lead to a fine and even point, the pencil is merely swung parallel to the longitudinal axis of the passage 25 and given a few more turns upon its longitudinal axis. The point thus provided will be sharp and even. Note that the arcuate disposition of the crossed cutting edges 23, at the point 28, and along the line 27, Figure 4, makes it possible to insert the pencil lead into the passage 25 for the full amount, and permits the swinging of the lead pencil to either side of the longitudinal center line of the tapered passage 25, Figure 4. When the pencil lead is thus swung in the space between the opposed stacks of blades the lead is brought into contact with the cutting edges of all of the blades in the two stacks, the cutting edges of the two opposed stacks of blades thus providing opposed abrading surfaces for sharpening pencil points.

The completely assembled device is small enough so that it may be conveniently held in the palm of one hand while the pencil is held in the other hand. During the sharpening of the lead pencil, the graphite particles or flakes which are shaved off by the cutting edges of the blades will pass out of either side of the tapered passage 25 and into either of the grooves 17 or 16. From these grooves, the graphite particles or flakes may pass rearwardly into the collecting chamber 36. To facilitate this movement of the graphite particles, the outer casing 33 may be tapped, and if the casing 33 is held upright with the end 35 lowermost, the graphite particles will gravitate from the grooves 16 and 17 into the chamber 36. In this manner, the sharpener is substantially self-cleaning and the parts may remain assembled for a substantial length of time until the chamber 36 is completely filled with graphite. No matter which side of the casing 33 is held uppermost, the graphite shavings in the tapered passage 25 must pass into one of the grooves 16 or 17.

The parts of the device, with the exception of the cutting blades 19 may be formed of wood, plastic or any other suitable strong and light material.

It is to be understood that the form of my invention herewith shown and described is to be taken as a preferred example of the same, and that various changes in shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

Having thus described my invention, I claim:

1. A pencil sharpener comprising a block having a main recess formed therein and opening to one end thereof, the block being provided upon opposite sides with grooves which form passages extending longitudinally of the block and communicating with said main recess at respectively opposite sides of the latter, opposed stacks of cutting blades mounted in said main recess and arranged to provide between the cutting edges of the blades a tapering passage extending longitudinally of the stacks and opening at one end to

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the open end of said main recess, a cover plate secured to said block at said one end thereof and extending marginally beyond the adjacent end of the block, said cover plate having a small opening therein leading into the larger end of said tapered passage, and an exterior casing receiving said block therein and abutting at one end against the marginal portion of said cover plate, said casing having its other end spaced from the other end of said block to form a graphite-receiving chamber in communication with said grooves.

2. A pencil sharpener comprising a substantially rectangular block having a main recess formed therein and opening to one end thereof, said block being provided upon opposite sides with longitudinal extending grooves forming passages communicating with said main recess at respectively opposite sides of the latter, opposed stacks of cutting blades mounted within said main recess and arranged to provide between the cutting edges of said blades a tapered passage extending longitudinally of said block with its larger end at the open end of said main recess and communicating at its opposite sides with the passages formed by said grooves, a cover plate

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secured to said block at said one end thereof and covering the open end of said main recess, said cover plate being provided centrally thereof with a small aperture leading into the larger end of the tapering passage between said stacks of cutting blades and extending marginally beyond said one end of said block, and an exterior casing of rectangular shape receiving said block therein, one end of said casing being open and abutting the marginal portion of said cover plate and the other end of said casing being closed and spaced from the adjacent end of said block to provide a graphite-receiving chamber which is in communication with the passages formed by said grooves.

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