May 20, 1924. 1,494,988

J. H. BOYD

PENCIL SHARPENER

Filed June 8, 1922

Fig. 1.

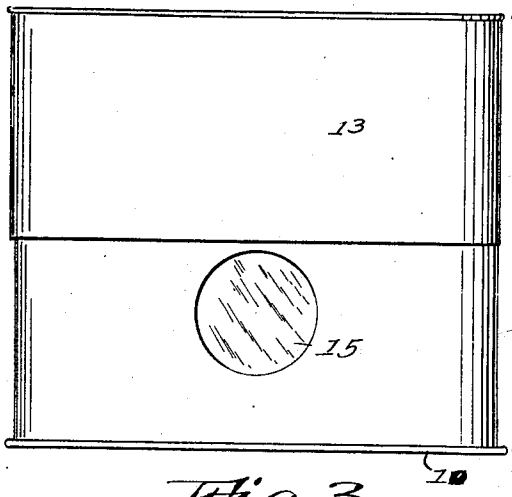


Fig. 2.

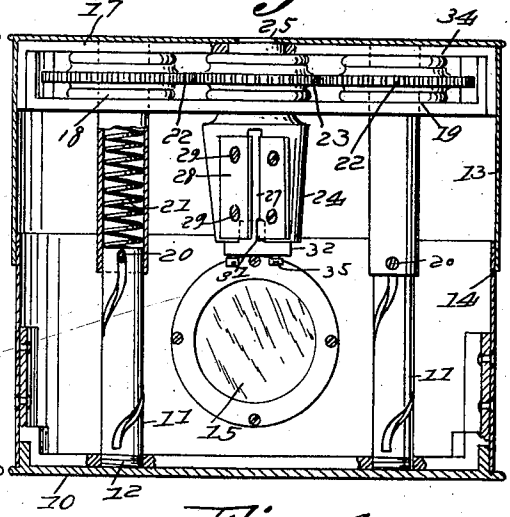


Fig. 3.

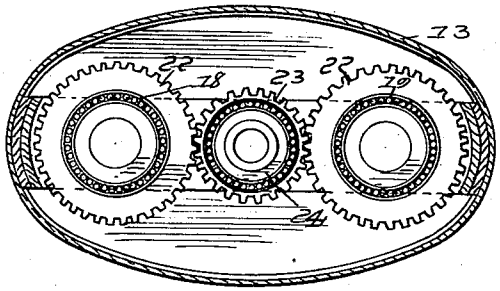
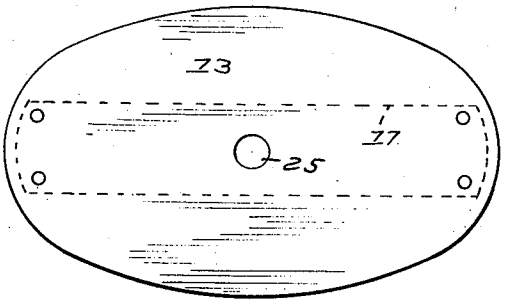


Fig. 4.



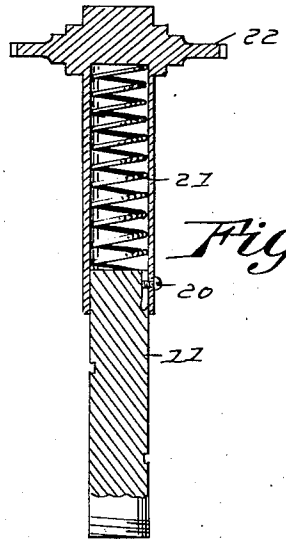


Fig. 5.

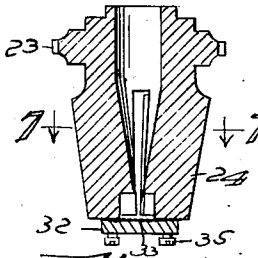


Fig. 6.

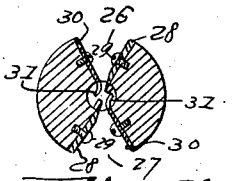


Fig. 7.

Inventor,
Joseph Henry Boyd,
By Marks Adamson.
Attorney

Patented May 20, 1924. 1,494,988

UNITED STATES PATENT OFFICE.

JOSEPH HENRY BOYD, OF RICHMOND FURNACE, MASSACHUSETTS.

PENCIL SHARPENER.

Application filed June 8, 1922. Serial No. 566,810.

To all whom it may concern:

Be it known that I, JOSEPH H. BOYD, a citizen of the United States of America, and resident of Richmond Furnace, in the county of Berkshire and State of Massachusetts, have invented certain new and useful Improvements in Pencil Sharpeners, of which the following is a specification.

This invention relates to pencil sharpeners, and particularly to a sharpener the cutting portion of which is provided with novel means for its rotation as pressure is applied to a portion of the casing or housing of the sharpener.

It is an object of this invention to provide novel means whereby a sharpener is rotated automatically by pressure on the casing, means being further provided for facilitating the operation of the cutter under the pressure in one direction by an operator and under the impluse of springs in the opposite direction.

It is an object of this invention furthermore to produce a pencil sharpener in which the cutter is provided with a lead dressing or trimming element, effective to shape the end of the lead after the pencil has been sharpened.

It is a further object of this invention to produce a cutter having means for protecting the exposed lead to prevent it from being broken while the device is being manipulated; and the invention further includes novel means for communicating rotary motion to the cutter from the reciprocating action or motion imparted to the cutter mounting or carrier.

It is furthermore an object of this invention to produce a cutter which can be operated expeditiously and by one hand, as the pencil may be held and force applied simultaneously.

With the foregoing and other objects in view, the invention consists in the details of construction, and in the arrangement and combination of parts to be hereinafter more fully set forth and claimed.

In describing the invention in detail, reference will be had to the accompanying drawings forming part of this application wherein like characters denote corresponding parts in the several views, and in which—

Figure 1 illustrates a view in elevation of the casing in which the mechanism is housed;

Figure 2 illustrates a vertical sectional view thereof, showing the mechanism partly in section and partly in elevation;

Figure 3 illustrates a horizontal sectional view of the device just under the cover of the casing;

Figure 4 illustrates a plan view of the said cover;

Figure 5 illustrates a sectional view of the motion imparting drive for the cutter;

Figure 6 illustrates a sectional view of the cutter head and parts associated with it; and

Figure 7 illustrates a sectional view on a line corresponding with the line 7—7 of Fig. 6.

In these drawings 10 denotes a base which is so formed as to be capable of use as a paper weight, and the said base constitutes anchorages for the spirally grooved posts 11, it being shown that the said posts are anchored in place by screw threaded joints 12.

A cover 13 telescopes with respect to the side 14 of the base, and the said side may be provided with a glazed or other transparent covering 15 which guards an opening through which the interior of the casing may be seen. The telescoping cover has a bracket or hanger 17 therein, secured in place in any appropriate manner, and this bracket constitutes bearings for journals 18 and 19, the lower ends of which are hollow and form housings which telescope with relation to the posts 11. Each housing has a stud or pin 20 which fits in a spiral groove of its respective post, and therefore, as the housings are telescoped on the said posts and the pins travel in the spiral grooves, the journals are rotated in their bearings.

The springs 21 are located in the housings and bear against the ends of the posts and serve to hold the parts in the normal postions shown in Fig. 2, it being understood that when the telescoping cover is pressed downwardly, the springs 21 are compressed, whereas when the telescoping cover is released, the springs act to force the said cover upwardly. By this action, the cutter is rotated alternately in opposite directions as the cover is pressed down and forced upwardly.

Each journal preferably has an integral pinion 22, the teeth of which engage teeth 23 of the cutter head 24, which cutter head

is likewise journaled in the hanger, and the parts are preferably in the associated relation shown in Fig. 2.

The cutter head is hollow and of a configuration to receive a pencil. The cover has an aperture 25 which is in alinement with the opening in the cutter head, and the pencil may be inserted through the said opening into the cutter head.

The cutter head has, in the present embodiment of the invention, two radially disposed and outwardly flared slots 26 and 27, and to one wall of each slot, a cutter blade 28 is secured by fastenings 29 such as screws, whereas spring plates 30 are secured to the opposite walls of the slots, and the springs 31 thereof serve to engage and brace the exposed lead of a pencil in order to prevent its being broken or fractured.

A plate 32 is secured on the lower end of the cutter head, and this plate is preferably provided with an abrading or file-like upper surface 33 which will serve to engage the end of the lead to dress it to appropriate sharpness after the knives have acted on it.

It will be seen that the cover has a rib or apertured plate 34 on its under surface in which the cutter head is journaled and in which the upper ends of the journals 19 are rotatably guided. The plate 32 is secured on the cutter head by fastenings 35 such as screws.

I claim:

1. In a pencil sharpener, telescopically arranged elements, means for exerting force to act normally to separate the elements, a post carried by one of the elements having a spiral groove, a member rotatably mounted in the other element and having a stud adapted to travel in the spiral groove whereby the member is rotated as the elements are moved toward or away from each other, a cutter head rotatably mounted in one of the elements and means for communicating the motion of the rotatable member to the cutter head.

2. In a pencil sharpener, a rotatably mounted cutter head, said cutter head having oppositely disposed slots the walls of which are flared, knives secured to one of the walls of each slot, a spring for engaging the exposed lead of a pencil secured to the other wall of each slot, and means for rotating the said head.

3. In a pencil sharpener, a rotatably mounted cutter head, said cutter head having oppositely disposed slots the walls of which are flared, knives secured to one of the walls of each slot, a spring for engaging the exposed lead of a pencil secured to the other wall of each slot, means for rotating the said head, and elements on the end of the cutter head for engaging the end of the lead for shaping the said end.

4. In a pencil sharpener, a hollow cutter head having radially disposed slots, a blade secured to one of the walls of each slot, an element for engaging and bracing the exposed lead of a pencil secured to the other wall of each slot, and means for rotating the cutter head.

5. In a pencil sharpener, telescopically arranged elements, journals rotatably mounted in one of the elements and having gear teeth, a sleeve forming a part of each journal, spirally slotted posts fitting in the said sleeves, a cutter head rotatably mounted between the journals and having teeth engaging the teeth of the journals by which the cutter head is driven, springs for urging the elements apart, and blades carried by the cutter head.

6. In a pencil sharpener, telescopically arranged elements, journals rotatably mounted in one of the elements and having gear teeth, a sleeve forming a part of each journal, spirally slotted posts fitting in the said sleeves, a cutter head rotatably mounted between the journals and having teeth engaging the teeth of the journals by which the cutter head is driven, springs for urging the elements apart, the said cutter head having transversely disposed slots with flared walls, a knife secured to one of the walls of each slot, a lead guiding spring secured to the other wall of each slot, and an element carried by the head for dressing the end of the lead.

JOSEPH HENRY BOYD.