Nov. 23, 1943. E. C. HOFFMANN 2,335,148

PENCIL SHARPENER CONSTRUCTION

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Fig. 1.

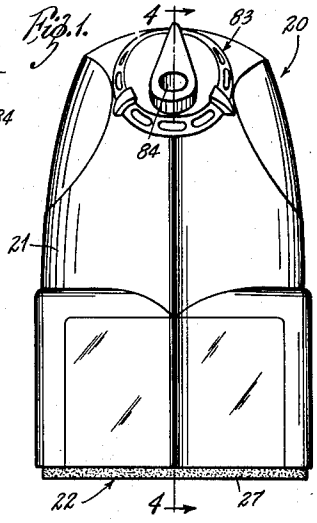


Fig. 2.

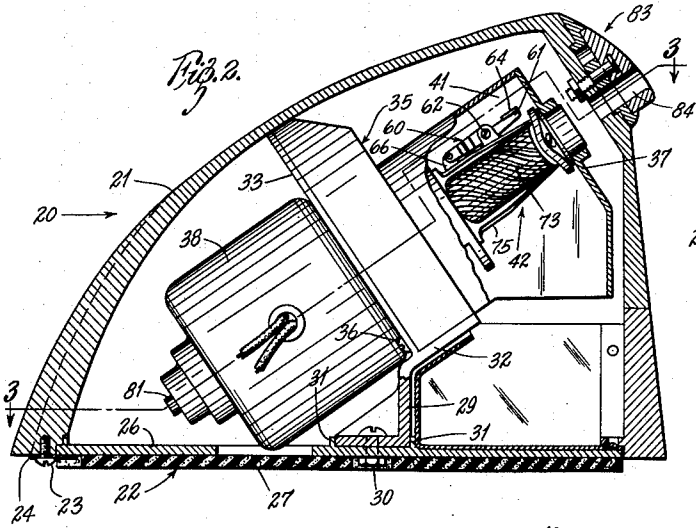


Fig. 3.

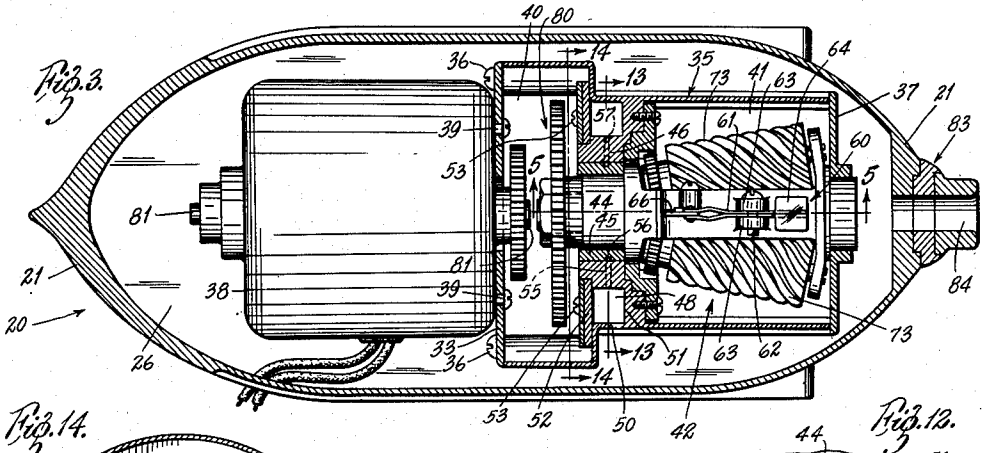


Fig. 14.

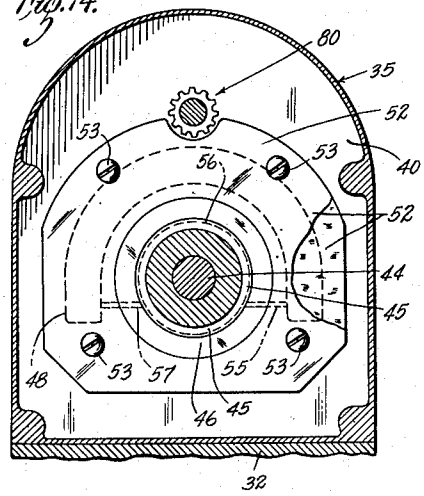


Fig. 13.

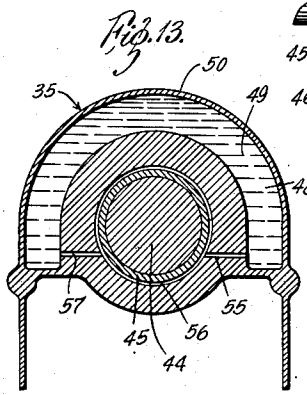
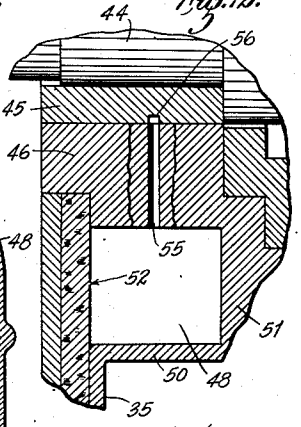


Fig. 12.



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Fig. 11.

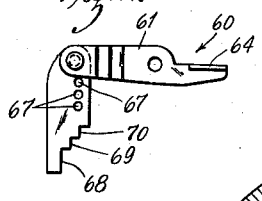


Fig. 4.

Fig. 5.

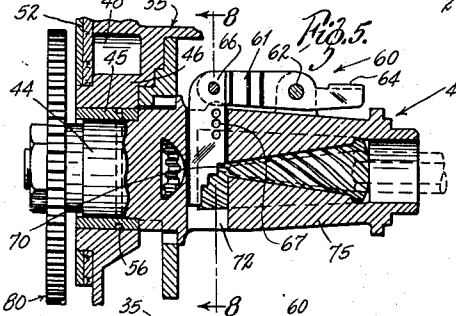


Fig. 7.

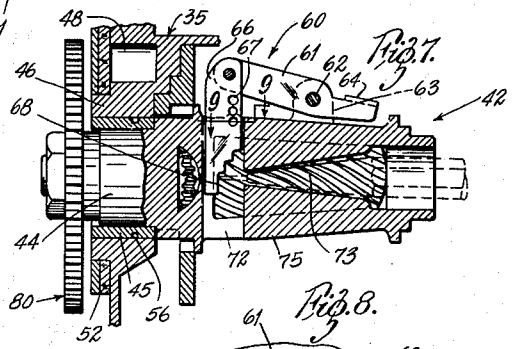


Fig. 6.

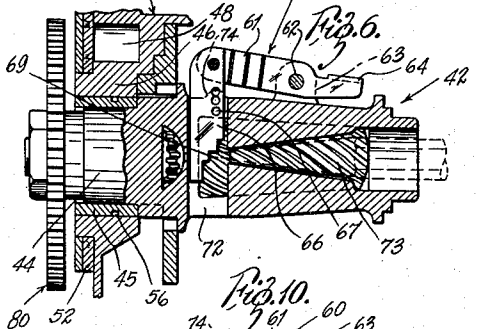


Fig. 8.

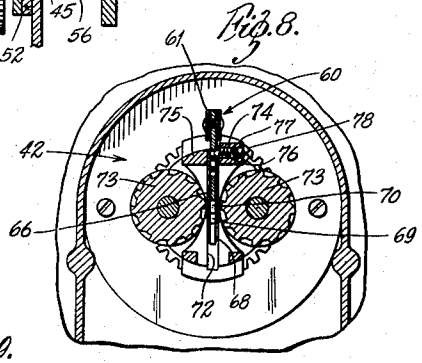


Fig. 10.

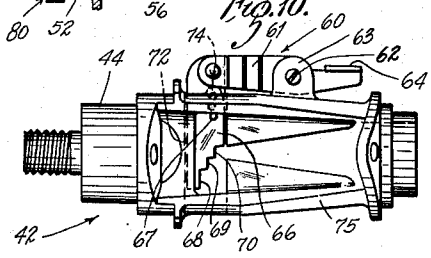
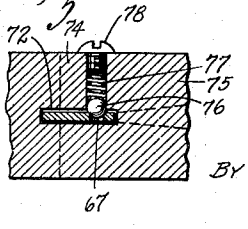


Fig. 9.



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2,335,148

UNITED STATES PATENT OFFICE

2,335,148

PENCIL SHARPENER CONSTRUCTION

Edward C. Hoffmann, University City, Mo., assignor to Triple "E" Products Company, St. Louis, Mo., a corporation of Missouri

Application March 14, 1942, Serial No. 434,765

5 Claims. (Cl. 120—96)

The present invention relates generally to pencil sharpeners, and more particularly to bearing constructions for pencil sharpener rotating assemblages and to pencil pointing constructions.

An object of the present invention is to provide a novel bearing construction for pencil sharpener rotor assemblages, which finds particular use with an automatic pencil sharpener having a rotor which is moved at high speeds.

Another object is to provide a novel bearing construction for pencil sharpeners which permanently and automatically oils the main bearing end of the rotor assemblage of the sharpener.

Another object is to provide a novel bearing construction for pencil sharpeners which provides lifetime oiling of the main bearing of the rotor.

Another object is to provide a novel bearing which is adapted to oil a rotating part automatically throughout a long period of service.

Another object is to provide a novel bearing construction which is adapted to function under severe usage.

Another object is to provide a novel pencil pointing construction for use with pencil sharpeners.

Another object is to provide a novel pencil pointing construction for sharpeners which is adjustable for obtaining a fine point to a blunt point.

Another object is to provide a novel pencil pointing construction for sharpeners which is permanently guided in its pointing portion across the axis of rotation of the pencil receiving core.

Other objects are to provide a novel pencil pointing construction for sharpeners which is positive in functioning, which does not get out of adjustment or alinement even under severe usage, and which is adapted to fulfill all the objects and advantages sought therefor.

Other objects and advantages are apparent from the following description taken in conjunction with the accompanying drawings in which:

Fig. 1 is a front view of an automatic electric pencil sharpener which incorporates the present novel bearing construction and pencil pointing construction;

Fig. 2 is a longitudinal section through the pencil sharpener shown in Fig. 1, parts being broken away for clarity;

Fig. 3 is a section on the line 3—3 of Fig. 2;

Fig. 4 is a section on the line 4—4 of Fig. 1;

Fig. 5 is a section on the line 5—5 of Fig. 3 showing the pencil pointing construction in one of the extreme positions of movement;

Fig. 6 is a section on the line 5—5 of Fig. 3 showing the pencil pointing construction in an intermediate position;

Fig. 7 is a section on the line 5—5 of Fig. 3 showing the pencil pointing construction in the other extreme position of movement;

Fig. 8 is a section on the line 8—8 of Fig. 5;

Fig. 9 is a section on the line 9—9 of Fig. 7;

Fig. 10 is a side view of the pencil pointing construction and the rotor with the cutters removed;

Fig. 11 is a side view of the pencil pointing construction levers;

Fig. 12 is a section on the line 12—12 of Fig. 3;

Fig. 13 is a section on the line 13—13 of Fig. 3; and

Fig. 14 is a section on the line 14—14 of Fig. 3.

Referring to the drawings more particularly by reference numerals, 20 indicates generally an electric pencil sharpener incorporating the novel features of the present invention. The sharpener 20 includes a casing 21, shown of a plastic material and of a streamlined configuration, which is secured to a bottom plate 22 by a screw 23 and underhanging pivoted member 24 cooperating with forwardly disposed interlocking elements of any nature (not shown). The base 22 includes a main platform portion 26 of metal, or the like, and a rubber cushion 27.

A supporting bracket 29 (Fig. 4) is anchored by a nut and bolt 30 to the upper portion 26, being maintained in alinement by lateral guides 31. The bracket 29 includes a portion 32 at substantially 45° to the horizontal and a wall portion 33 at substantially 90° thereto. A housing casting 35 (Figs. 2, 3, 4, 13, and 14) of the configuration shown, is secured by suitable screws 36 to the wall portion 33, extends from one face thereof, and rests on the portion 32. A header member 37 is secured to the end of the casting 35. An electric motor 38 is secured to the other face of the wall portion 33 by suitable screws 39.

The casting 35 forms with the wall portion 33, a chamber 40, and with the header 37, a chamber 41. Within the chamber 41 is a rotary cutter assemblage 42 which includes a bearing shaft 44 mounted in a bearing ring 45 (Figs. 12 and 13) which is in turn supported by an annular portion 46 formed as a part of the casting 35 (Fig. 3). The bearing ring 45 is of "Oilite," or similar material, comprising compressed ground brass and other materials impregnated with oil to a substantial degree. Extending around substantially

two-thirds of the portion 46 is a lubricant trough 48 for oil 49, or the like. An outer wall 50 and one side wall 51 of the trough 48 are formed integral with the casting 35, the other wall 52 comprising a plate and sealing washer secured in place by suitable screws 53. A small hole 55 extends through the portion 46 at a suitable point in alinement with a shallow groove 56 in the bearing ring 45 for the reception of oil 49. Similarly, an aperture 57 extends through an opposing side of the portion 46 in alinement with the groove 56.

A pencil pointing construction 60 (Figs. 3–11) is mounted on the rotary cutter assemblage 42. A lever link 61 is pivoted immediate its ends on a screw pin 62 supported by spaced ears 63 between which the lever 61 is disposed (Fig. 3). The lever 61 includes a handle portion 64 at one end by means of which it may be manually pivoted about the screw pin 62. The lever 61 is of double construction and receives between the ends remote from the handle 64 a link 66 which has apertures 67 adjacent the pivot end and steps 68, 69, and 70 formed in the other end.

The link 66 slides in a groove 72 formed between cutting rollers 73 of the rotary cutting assemblage 42 at the converging ends thereof (Figs. 8 and 9). A boss 74 formed in a skeleton wall 75 of the rotary cutter assemblage 42 receives a ball 76 which is urged inwardly by a spring 77 maintained in position by a screw 78. The ball 76 is adapted to sit in a selected aperture 67 of the link 66 for purposes of centrally locating a selected step 68, 69, or 70 in a position to receive as a stop the point of a pencil being sharpened by the rotary cutting rollers 73.

Within the chamber 40 is suitable reduction gearing 80 operatively connecting a drive shaft 81 of the motor 38 to the rotary cutter assemblage 42, the specific details being manifest from the drawing and well-known in the art.

A pencil sizer construction 83 (Figs. 1–4) is connected to the casing 21 at the usual point and includes an adjustable opening 84 to receive a pencil for sharpening. The details of this construction are particularly described in my copending application, Serial No. 416,039, filed October 22, 1941, and require no specific description here since the same forms no part of the present invention.

Operation

The mechanical operation of the disclosed electrical pencil sharpener is well-known in the art. The insertion of a pencil through the opening 84 into the space between the cutting rollers 73 throws a switch mechanism (not shown) to energize the motor 38 which drives the cutting rollers 73 through the reduction gearing 80.

It is manifest that some form of lubricant is necessary to prevent the bearing shaft 44 of the rotary cutting assemblage 42 from heating up with a resultant "freezing" action. Grease cups, oil cups, and the like, are both impractical and unsatisfactory. Whether or not the lubricating substance is periodically administered when such devices are used is necessarily left to the user or attendant. The present invention provides a lifetime lubricating construction, for sufficient oil is originally stored in the trough 48 for lifetime use of the pencil sharpener 20. The oil 49 permeates the oil compound material of the bearing ring 45 and provides an oil film on the interior bearing surface thereof, sufficient in quantity to keep the bearing shaft 44 greased continuously. However, seepage of the oil 49 is very slow, and, hence, one filling of the trough 48 will last for an indefinite period of time. The groove 56, which may or may not extend around the full circumference of the bearing ring 45, permits a greater access of oil into the ring 45, and also assists the assembly of the ring 45 and portion 46. Where only indentations are employed in ring 45 it is impossible to make the same first and then mount the ring 45 in the portion 46 with the indentations in alinement with the holes 55 and 57. A groove 56 or indentation in the ring 45 is necessary to effect permeation of the oil.

The pencil pointing construction 60 provides an effective means for securing a very fine, a medium, or blunt point for a pencil being sharpened by the pencil sharpener 20. In Fig. 5, the pointer 60 is in the position to provide a blunt point; in Fig. 6, to provide a medium point; and in Fig. 7, to provide a fine point. The spring pressed ball 76 maintains the ponting construction 60 in the selected position.

An important feature of the pointing construction 60 resides in the groove construction 72 which receives the link 66. The groove 72 maintains the link 66 against lateral movement so that the selected step 68, 69, or 70 of the link 66 is at all times centrally disposed to receive the point of a pencil being sharpened. Since only a thin edge can be employed, it is essential that there be no lateral movement, for otherwise there would result an eating away of the pencil being sharpened by the sharpening rollers.

It is to be understood that the present constructions may be varied in configuration and in material. Further, the constructions find application to pencil sharpeners other than the electrical type disclosed.

It is to be understood that the foregoing description and the accompanying drawings are given by way of illustration and example and not for purposes of limitation, the invention being limited only by the claims which follow.

I claim:

1. In a pencil sharpener, a converging means to receive the end of a pencil to be sharpened, including a cutting means adapted to cut the end of said pencil to a tapered point, a support, a first member pivoted thereon, a second member pivoted to the first member, said second member including a portion disposed to be contacted by the point of a pencil being sharpened, said contactable portion being stepped for varying the sharpness of the pencil point, and means for maintaining said second member against lateral movement.

2. In a rotary cutting assemblage for pencil sharpeners, a base, a first member pivoted thereon intermediate its ends, a second member pivotally connected to the first member, a guide formed in the base and extending through the axis of rotation receiving the second member for preventing lateral movement while permitting reciprocating movement, said second member including a portion of varying width movable through the axis of rotation, said portion being adapted to stop a pencil being sharpened and being movable to vary the sharpness.

3. In a pencil sharpener, a converging means to receive the end of a pencil to be sharpened, including a cutting means adapted to cut the end of said pencil to a tapered point, a support, a first member pivoted thereon, a second member pivoted to the first member, said second member

including a stepped portion disposed to be contacted by the point of said pencil being sharpened.

4. In a pencil sharpener, a converging means to receive the end of a pencil to be sharpened, including a cutting means adapted to cut the end of said pencil to a tapered point, a support, means for limiting the longitudinal movement of the point of said pencil including a stepped portion mounted on said support, and means for maintaining said stepped portion against lateral movement and in point-receiving position.

5. In a pencil sharpener including a rotary cutting assemblage having a base, a guide formed in the base and extending through the axis of rotation, and means for receiving the point of a pencil to limit its inward movement including a stepped portion disposed in the guide and means for moving the stepped portion to dispose a different part in pencil-receiving position.

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