Feb. 6, 1940. E. S. SIGGELKO 2,189,476

PENCIL SHARPENING MACHINE

Filed Oct. 3, 1938 2 Sheets-Sheet 1

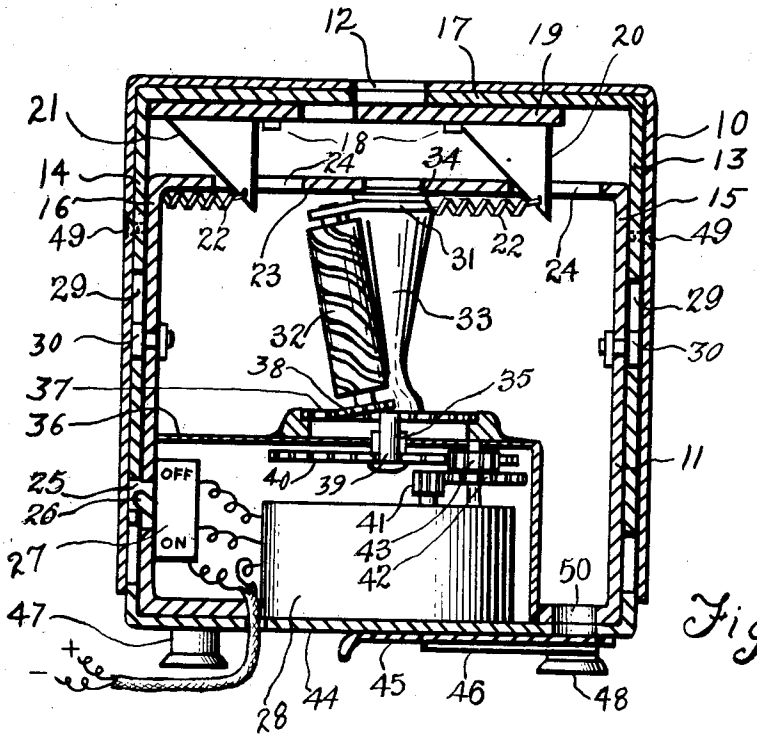


Fig. 1

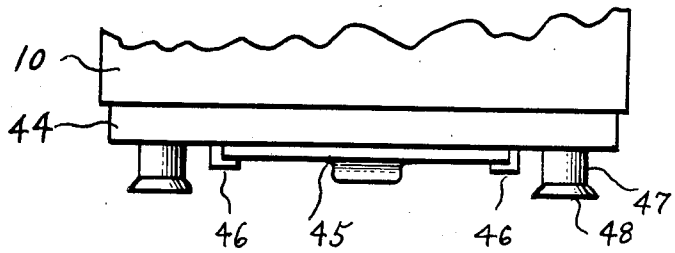


Fig. 2

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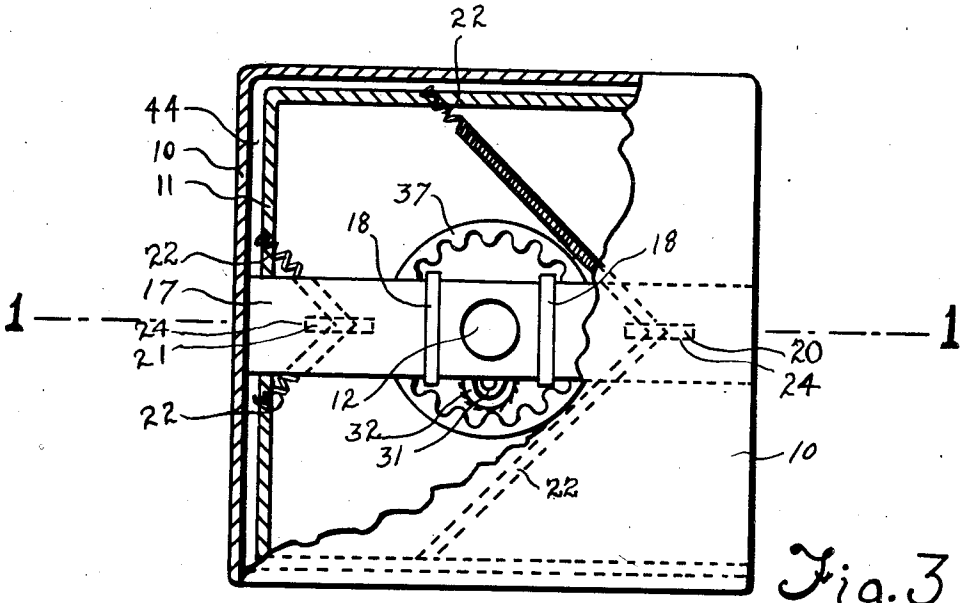


Fig. 3

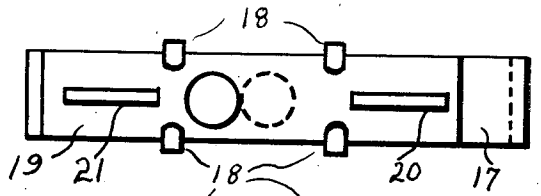


Fig. 4

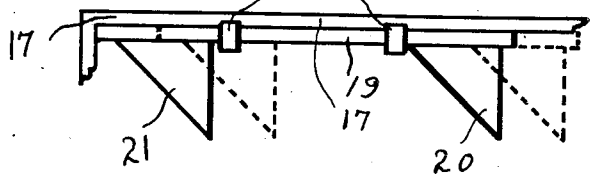


Fig. 5

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UNITED STATES PATENT OFFICE

2,189,476

PENCIL SHARPENING MACHINE

Edgar Stanley Siggelko, Rochester, N. Y.

Application October 3, 1938, Serial No. 232,932

4 Claims. (Cl. 120—96)

The present invention relates to pencil sharpening machines, and has for its object the provision of means of motivating the pencil pointing mechanism and for automatically stopping said mechanism.

A further object is to provide a closure for the pencil opening of such a machine synchronized with the motor so as to open in synchronism with the starting of the motor and to close with the stopping of the motor.

A further object is to provide such a machine with a container for the pencil shavings separated from the motor housing and easily accessible for disposing of the same.

These and other objects will appear in the specification and be pointed out in the claims.

In the drawings, wherein like numerals denote like parts,

Fig. 1 is a vertical sectional view partly in elevation of the assembled motor driven pencil sharpening machine taken along the line 1—1 of Fig. 3.

Fig. 2 is a fragmentary frontal elevation of the pencil sharpening machine shown in Fig. 1.

Fig. 3 is a top plan view, partly broken, and partly in section of the machine shown in Fig. 1.

Fig. 4 is a bottom detail view and Fig. 5 is a detail side view of the reciprocating closure bar, the broken lines representing the position of the bar in open position when the sharpening machine is in operation.

A motor driven pencil sharpener renders a smooth, sharp point due to its speed and the freedom of the operator from body motions which in hand sharpeners are transmitted to the pencil. Through some inexplainable human weakness, however, the pencil opening is an invitation to insert matches, nails, tacks, and many sorts of articles other than pencils. The result is usually disastrous to the machine and will often wreck a motor driven machine.

The present invention, by the provision of an automatically actuated closure, insures that the pencil opening will be closed except when the machine is being used. Due to the arrangement provided, synchronization between starting of the motor and opening of the closure may be adjusted in any suitable manner; it having been found that if the motor is started slightly in advance of the cutting operation on the pencil, a smaller motor may be used without danger of stalling because of a heavy starting load. Another advantage of the present invention is gained in pointing a new pencil, for unlike the type of switches operated by insertion of the pencil, the motor is started by simply pressing on the cover of the machine which action also exposes the pencil opening and the pencil may be inserted for sharpening.

In switches wherein the switch lever is moved by the pencil, there is danger of shorting. The graphite in a pencil is a good conductor of electricity and may cause shock to the operator. Where the pencil motivates the switch, the switch must be within close proximity of the pencil, and will not accommodate many diameters of pencils without adjustment.

In the present invention the pencil is remotely positioned from the switch, motor and electric wiring, and can be completely insulated therefrom against any possible shock. Various diameters of pencils may be sharpened without adjusting the switch.

In its preferred embodiment, the invention consists of an outer case 10 and an inner case 11 telescoping together so as to form a closed receptacle. The outer case is perforated to form an opening 12 where the pencil to be sharpened is inserted; the outer case 10 is also preferably provided with a pair of vertical straps 13 and 14 which have a sliding fit with another pair of inner vertical straps 15 and 16 which are secured to the inner case 11, and are preferably formed as vertical extensions of the inner case 11. A horizontal strap 17 connects the pair of outer vertical straps 13 and 14 forming together a U-shaped member extending about the inner case 11. The horizontal strap 17 is perforated concentrically with the outer casing and is provided with bearing ways 18 for retaining a reciprocating closure member 19 in alignment with the opening 12. The reciprocating closure member 19 is preferably a perforated horizontally extending flat bar provided with a pair of wedge shaped cam members 20 and 21 extending at right angles to the plane of the closure bar 19 and these members are attached to coil springs 22 extending from the wall of the inner case 11 by which the bar 19 is urged laterally to normal closed position, in which position the perforation of bar 19 is drawn away from the perforation 12 of the cover, so as to close said opening.

The inner vertical straps 15 and 16 are likewise connected with a horizontal strap 23 forming another U-shaped member extending about the inner case 11 adjacent the outer horizontal strap 17 and the closure bar 19. Elongated slots 24 to act as cam surfaces and guides for the wedge cams 20 and 21 are provided in the inner horizontal strap 23 so that as the outer case, together with the horizontal strap 17 and closure bar 19 are moved toward the inner horizontal strap 23, the closure bar 19 is forced laterally in opposition to the tension of springs 22 by the movement of the wedge cams 20 and 21 within the slots 24, thus bringing into concentric relation the perforations in the outer case 10, horizontal straps 17 and 23 and the closure bar 19, assuming thereupon the "open" position. The springs 22 which are preferably tensioned be-

tween the closure bar 19 and the inner case 11 return the outer case 10, the horizontal strap 17 and the closure bar 19 to normal retracted "closed" position.

The outer vertical strap 14 is preferably slotted with an opening 25 to receive a switch lever 26 of an electric switch 27 secured to the adjacent inner vertical strap 16, so that as the outer case 10 is depressed, the switch lever 26 is moved into closed position, energizing the motor 28, the closure bar 19 having simultaneously been actuated laterally to the "open" position. Guide slots 29 and keys 30 may also be provided to maintain alignment between the vertical straps and prevent sticking of the outer case during telescopic movements.

The pencil pointing mechanism 31 is preferably of the rotary type employing a spiral milling cutter 32 and taper bored guide 33, the guide 33 being journaled in the bearing 34 in horizontal strap 23 and the bearing 35 which is seated in the inner case partition 36, the large stationary gear 37 being spaced from said partition 36, to allow angular meshing with the pinion gear 38 driving the spiral cutter 32.

The electric motor driving the main shaft 39 of the pointing mechanism is preferably disposed beneath the partition 36, driving the main gear 40 keyed to the main shaft 39 of the pointing mechanism through the train of gears 41, 42, 43.

For convenience in disposing of the pencil shavings an opening 50 is provided at the bottom of the inner case 11 extending through the bottom pan member 44 covered by a sliding door 45 which slides on guide ways 46 secured to the bottom of the machine.

The legs 47 may be provided with rubber feet 48 to prevent marring the table surface on which the machine rests.

Set-screws 49 may be used to secure the outer case 10 to the outer horizontal reciprocating straps 13 and 14.

To operate the machine, the outer case 10 is depressed, thereby causing the bar 19 to move laterally bringing its perforation into concentric relation to the opening 12, being the axis of the sharpening head bore, and simultaneously closing the switch 27 thereby energizing the motor 28 which, through the train of gears 41, 42, 43 and 40, rotates the pointing head 31 and in so doing causing the spiral cutter to rotate at a greater speed than the pointing head by reason of the ratio existing between pinion 38 and stationary gear 37. When the pencil is inserted it is quickly pointed with the slightest pressure, the pencil itself serving to keep the cover 10 in depressed condition by reason of the wedging action of the perforation in the closure bar. The pencil may be pulled out of the opening 12, by which action springs 22 return the closure bar 19 to retracted position, elevate the outer case 10 and its straps 13 and 14, the strap 14 opening the switch 27 on its upward movement. The machine in such normal condition has closed its opening, stopped its motor automatically, and is completely enclosed and protected.

While I have shown and described my invention in a preferred form, I am aware that various changes and modifications may be made without departing from the principles of my invention, the scope of which is to be determined by the appended claims.

I claim as my invention:

1. An electric pencil sharpener comprising an inner case and a perforated outer case telescopically sleeved over the inner case; electric motor driven pencil sharpening means secured to said inner case; a switch in the circuit of said motor adjacent said inner case the lever of said switch being actuated by cam means on said outer case upon telescopic movement of said cases for energizing and de-energizing said motor; and a closure for said perforated outer case operatively disposed between and actuated by relative movement of said inner and outer cases and actuated simultaneously with said switch, whereby telescopic closing movement of said cases actuates said switch to energize said motor and opens the closure to allow insertion of a pencil into the sharpening means.

2. A combined closure and switch for an electric motor driven pencil sharpening machine comprising an outer case perforated for receiving a pencil; an inner case provided with electric motor driven pencil sharpening means, with an opening for receiving the pencil concentric with the perforation in said outer case; closure means for said opening operatively disposed between and actuated by relative movement of said inner and outer cases; and switching means operatively connected with said motor and actuated in synchronism with said closure means upon relative movement of said inner and outer cases.

3. In a device of the class described the combination of an inner closure and a depressibly mounted outer receptacle shaped closure provided with a pencil opening and a closure for said pencil opening; a rotary pencil sharpening cutter and guide disposed axially of said pencil opening; and a motor and switch therefor mounted within said outer closure; a gear arrangement connecting said motor and cutter; a wedge cam device on said pencil opening closure in cooperative engagement with said inner closure, the lever of said switch and said wedge cam device being actuated by movement of said outer closure so as to motivate said motor in advance of complete opening of said pencil opening upon depressing said outer closure.

4. In combination a rotary pencil sharpener including vertically extending rotary pencil pointing means driven by an electric motor; a switch in circuit with said electric motor, and switch actuating means comprising a vertically reciprocating member slotted for insertion therein of the lever of said switch, a perforated horizontal member reciprocating vertically and horizontally with said vertically reciprocating member provided with downwardly extending wedge shaped cam means, a stationary horizontal member underlying said reciprocating horizontal member slotted for receiving and cooperating with said wedge shaped cam means to move said reciprocating horizontal member in one direction when depressed, and spring means for automatically returning said horizontal reciprocating member after it is depressed, whereby the pencil sharpener is actuated by downward pressure on said horizontal member and automatically stopped upon release of pressure.

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