L. B. CHADWICK.

PENCIL SHARPENER.

APPLICATION FILED DEC. 5, 1910.

1,079,312. Patented Nov. 18, 1913.

Fig. 1.

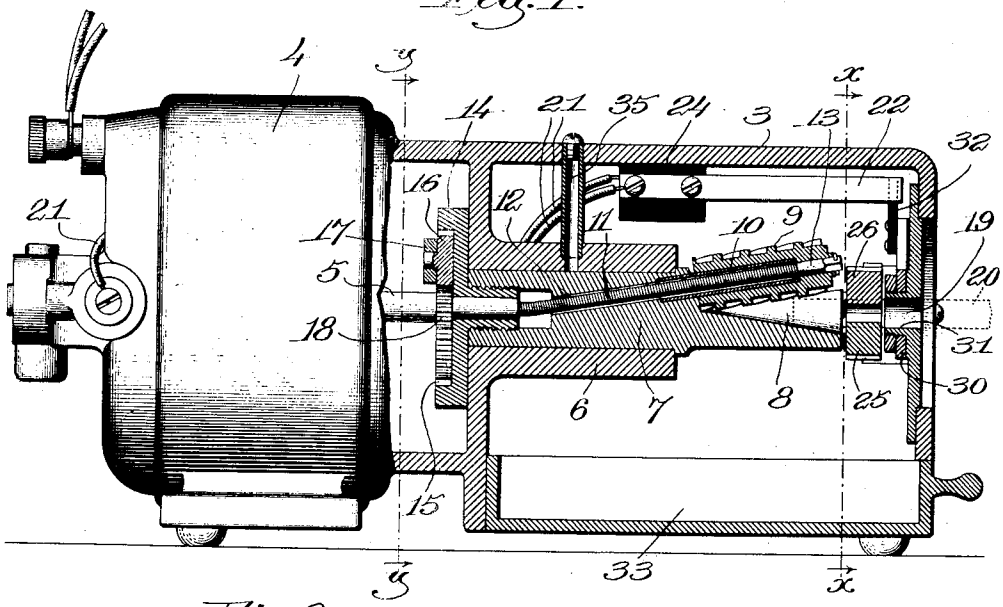


Fig. 2.

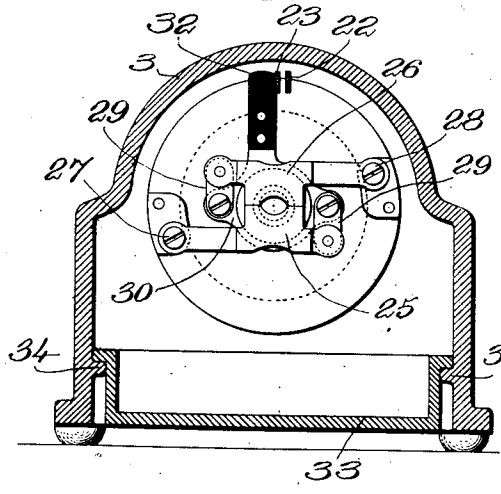


Fig. 3.

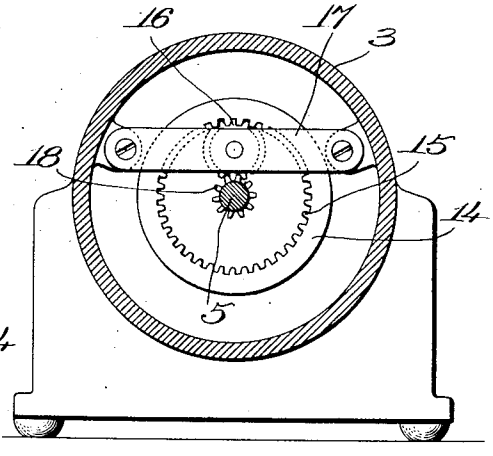


Fig. 5.

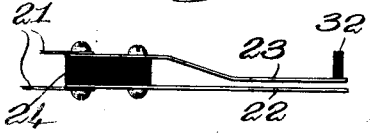


Fig. 4.

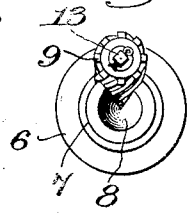
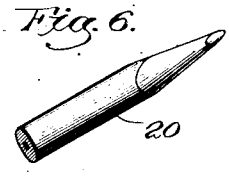


Fig. 6.



Witnesses.
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UNITED STATES PATENT OFFICE.

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PENCIL-SHARPENER.

1,079,312. Specification of Letters Patent. Patented Nov. 18, 1913.

Application filed December 5, 1910. Serial No. 595,569.

To all whom it may concern:

Be it known that I, LEONARD B. CHADWICK, a citizen of the United States, residing at Chelsea, county of Suffolk, and State of Massachusetts, have invented an Improvement in Pencil-Sharpeners, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention relates to automatic pencil sharpeners of that type wherein the act of inserting the pencil into the device will set it in operation, thereby to sharpen the pencil, and the act of withdrawing the pencil from the device will cause the operation thereof to cease. A device of this general nature is shown in my former Patent No. 894,600, July 28, 1909, and the present invention is in the nature of an improvement on said patented device. In said patented device a motor is employed for operating the sharpener and this motor is connected directly to and rotates a spindle which in turn carries a cutter, and means are provided whereby the cutter is rotated by or through movement of the spindle. The patented device also employs means for automatically closing the circuit of the motor when a pencil is inserted into the device, whereby the apparatus will be in operation so long as the pencil is inserted therein.

The present invention is in the nature of an improvement on this patented device and the object of the invention is to simplify the construction thereof and thereby cheapen the cost of manufacture; to provide a device wherein the cutter is driven directly by the motor while the spindle is driven indirectly thereby; and to otherwise improve the device, all as will be more fully hereinafter described and then pointed out in the appended claims.

Referring now to the drawings wherein I have illustrated a preferred embodiment of my invention, Figure 1 is a view partly in side elevation and partly in vertical section showing a machine made in accordance with the invention; Fig. 2 is a section on the line *x—x*, Fig. 1; Fig. 3 is a section on the line *y—y*, Fig. 1; Fig. 4 is an end view of the spindle with the cutter sustained thereby; Fig. 5 is a plan view of the contacts for the motor circuit; Fig. 6 shows how the pencil may be sharpened with my improved device to give a flat or chisel point.

The device as herein shown is inclosed in a suitable casing 3 and it includes a motor indicated at 4 which may be of any suitable or usual construction, the armature shaft of which is shown at 5. The casing 3 is provided with an interior bearing 6 in which is rotatably mounted a cutter carrier or spindle 7 which is provided with a conical pencil-receiving chamber or recess 8 and which sustains the cutter 9 that may be of any suitable or usual construction. The cutter 9 is situated eccentrically of the spindle and at an angle as usual in this class of devices, and when the device is in operation and the end of a pencil is inserted into the chamber 9, the rotation of the spindle carries the cutter about the pencil and the rotation of the cutter about its own axis operates to sharpen the pencil, all as usual in devices of this class.

In my present invention I connect the cutter 9 directly to the motor shaft 5 so that the cutter is driven positively and directly by said motor, and I provide gearing between the shaft 5 and the spindle 7 for rotating the spindle. As herein shown the cutter 9 is rotatably mounted upon a bearing member or support 10 which is in the form of a tube fixedly carried by the spindle 7 and situated eccentrically thereof and at the desired angle. The cutter 9 is provided with an interior bore or recess which fits over the bearing 10. The motor shaft 5 is provided with a flexible extension 11 which passes through an inclined aperture 12 formed in the spindle 7 and extends through the bearing 10, the end 13 of the shaft extension 11 extending into the cutter 9 and being secured thereto in any suitable way so that rotation of the shaft extensions 11 will give rotation to the cutter 9. The shaft extension 11 is situated at an angle to the motor shaft 5, but by making said extension in the nature of a flexible shafting, the rotation of the shaft 5 is transmitted directly to the cutter without any

difficulty. For rotating the spindle 7 I have provided said spindle with the head 14 having the internal gear teeth 15 which mesh with an idler 16 carried by a fixed support 17 and which in turn meshes with and is driven by a gear 18 on the motor shaft 5. With this construction, the rotation of the gear 18 will give rotation to the intermediate gear 16, and the latter will rotate the gear 15, and thus rotate the spindle 7, but because of the fact that the gear 15 is considerably larger than the gear 18 the spindle will rotate at a somewhat slower speed than the motor shaft and cutter do.

The casing 3 is provided with an opening 19 in one end thereof through which the pencil 20 is inserted, as seen in Fig. 1, said opening being so positioned that the end of the pencil when inserted will enter the pencil-receiving recess 8. The device herein shown comprises means for closing the motor circuit, which means are operated by the pencil when the latter is inserted through the opening 19. In the embodiment of the invention illustrated, the motor circuit is shown partially in diagram at 21, although I have not deemed it necessary to show the connections between said circuit and the motor, as these may be of any suitable construction. Said motor circuit includes two contact members 22 and 23 which are normally insulated from each other and which may be conveniently sustained by a block 24 of insulating material.

25 and 26 designate two jaws which are pivoted to the casing at 27 and 28, respectively, and which are situated to be engaged by the pencil as the latter is forced through the aperture 19. Each jaw is connected by a link 29 with a collar 30 which is mounted to turn about a boss or support 31 formed on the casing, and this collar has fast thereto an arm 32, preferably of insulating material, which is adapted to engage the contact 23. The jaws normally occupy the position shown in Fig. 2, but when a pencil is inserted between them they are spread apart thereby turning the collar 30 and swinging the arm 32 into a position to close the contacts 22 and 23 against each other thereby closing the motor circuit and starting up the motor. So long as a pencil is held in the aperture 19, the motor circuit will be closed and the motor will be operated to drive the pencil sharpener, but as soon as the pencil is withdrawn, the resiliency of the contacts 22 and 23 will spread them apart, thus opening the motor circuit, and bring the jaws back to their normal position shown in Fig. 2.

33 designates a chip receptacle or pan in which the chips are received. Said receptacle is slidably supported on ways 34 so that it can be readily withdrawn to empty out the refuse therein.

35 designates an oil well leading to the spindle 7 and by which said spindle may be oiled in its bearing.

It will be seen that the device herein shown is very simple in its construction and can be cheaply manufactured. Another advantage is that the cutter which is the rapidly-moving part is operated directly from the motor shaft, and the only gearing necessary is the reducing gearing required between the motor shaft and the spindle. In my former patent two sets of gearing were necessary, one connecting the motor shaft of the spindle and the other connecting the spindle with the cutter. Another advantage of the present construction is that by means of it, it is possible to sharpen a pencil with a chisel point, such as draftsman are wont to use. This can be done by first depressing the end of the pencil after it has been inserted into position to be cut, and then elevating the end. The result will be that the pencil will be sharpened in the manner shown in Fig. 6, thus giving the desired chisel point.

I would add that the invention is not limited to the constructional details illustrated, and that various changes in the parts might be made without departing from the invention.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In a pencil sharpener, the combination with a rotary spindle having a conical pencil-receiving recess, of a cutter carried thereby and rotatable independently of and with the spindle, a driving element connected to the cutter to rotate the latter, and connections between the driving means for the cutter and the spindle to rotate the latter from the former.

2. In a pencil sharpener, the combination with a spindle having a pencil-receiving recess, of a cutter sustained by the spindle and rotatable therewith, a motor connected directly to the cutter to rotate the latter independently of the spindle, and means to rotate the spindle.

3. In a pencil sharpener, the combination with a spindle having a pencil-receiving recess, of a cutter sustained by the spindle and rotatable therewith, a motor connected directly to the cutter to rotate the latter independently of the spindle, and means operated by the motor to rotate the spindle.

4. In a pencil sharpener, the combination with a rotary spindle having a conical pencil-receiving portion, of a cutter rotatably carried by the spindle, a motor, a flexible shaft connecting said motor and the cutter whereby the cutter is rotated directly from the motor, and means to rotate the spindle.

5. In a pencil sharpener, the combination with a rotary spindle having a conical pencil-receiving recess, of a cutter rotatably car-

ried by the spindle, a motor having a shaft provided with a flexible extension which is connected directly to the cutter whereby the cutter is rotated directly by the motor, and gearing between said motor shaft and spindle to rotate the latter.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

LEONARD B. CHADWICK.

Witnesses:
LOUIS C. SMITH,
THOMAS J. DRUMMOND.