

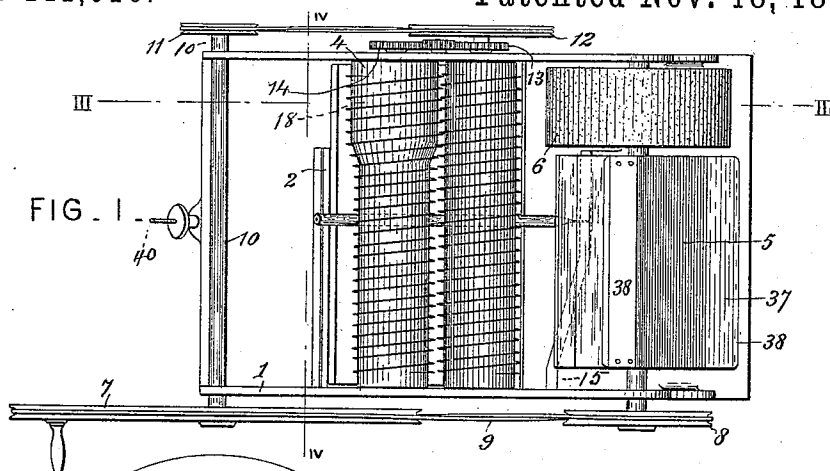
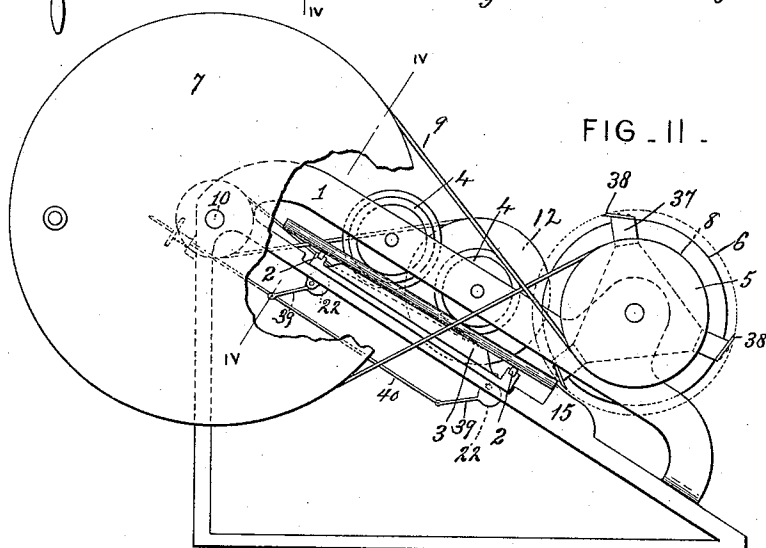
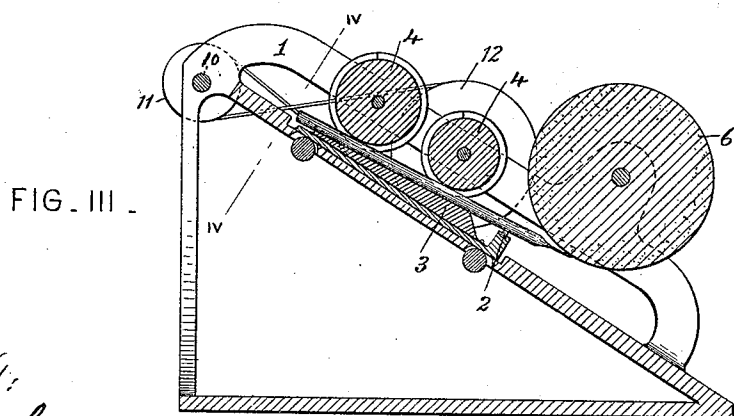
(No Model.)

2 Sheets—Sheet 1.

A. J. MUNDY.
PENCIL SHARPENER.

No. 441,016.

Patented Nov. 18, 1890.



Attest:
Geo. T. Smallwood,
E. Arthur.

Inventor:
Arthur J. Mundy,
By Knight Bros. attys.

(No Model.)

2 Sheets—Sheet 2.

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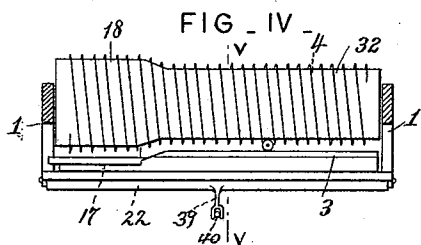


FIG. V.

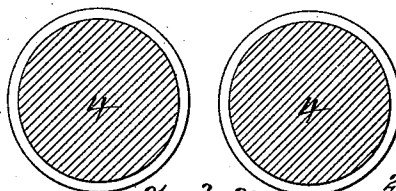
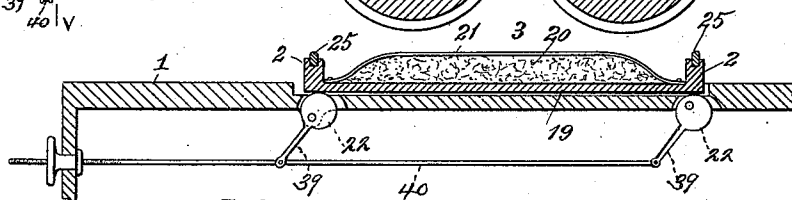


FIG. VI.

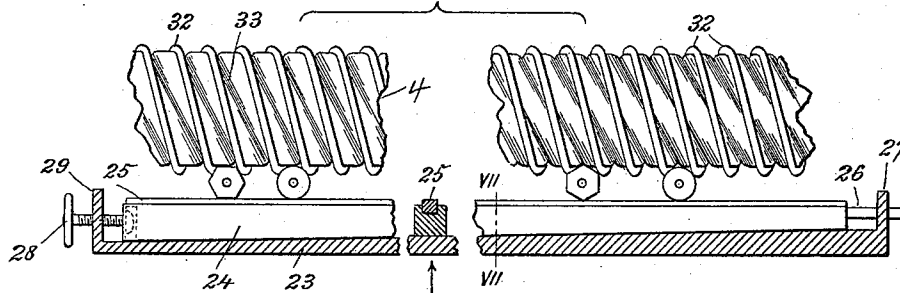


FIG. VII.

FIG. IX.

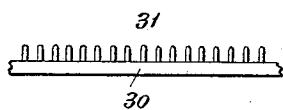


FIG. VIII.

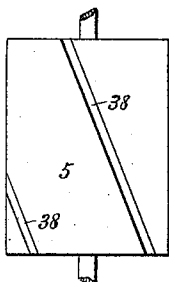
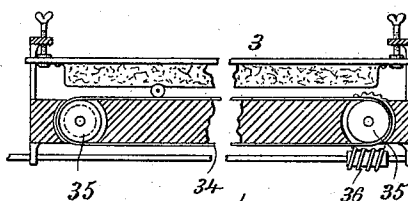


FIG. X.



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UNITED STATES PATENT OFFICE.

ARTHUR J. MUNDY, OF NEW YORK, N. Y.

PENCIL-SHARPENER.

SPECIFICATION forming part of Letters Patent No. 441,016, dated November 18, 1890.

Application filed February 26, 1890. Serial No. 341,848. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR J. MUNDY, a citizen of the United States, residing at New York, N. Y., have invented a certain new and Improved Pencil-Sharpener Machine, of which the following is a specification, reference being had to the accompanying drawings, forming part of the same.

The object of my invention is a machine which will economically and perfectly sharpen a pencil by first removing the wood to expose a portion of the lead without reducing the latter in size, and then sharpening the lead to a fine though abrupt point at a very slight loss of material.

The invention consists, essentially, of means for turning or rolling the pencils by friction in combination with revolving knives, also in a suitable gage for permitting the pencil to feed under the knives gradually.

More particularly my invention consists in two end supporting-ribs and an intermediate yielding bed with an adhesive surface, over which the pencil is rolled, two spiral rollers which confine the pencils upon and roll them over the bed, a vertical wall projecting up in front of the ends of the pencils and having its forward part inclined and its rear part parallel to the feeding-rolls, a series of rotary knives for removing the wood, and an emery-wheel for pointing the leads.

The invention further consists in certain details of construction, and the parts are so geared together as to be driven by a suitable drive-wheel, all of which will be hereinafter more particularly described.

In the drawings, Figure I is a plan of my machine. Fig. II is a side elevation. Fig. III is a section on the line III III, Fig. I. Fig. IV is a section on the line IV IV, Figs. I, II, and III. Fig. V is a section on the line V V, Fig. IV, showing the preferred construction of the bed. Fig. VI is a detail view showing the supplemental grooves in the roller adapting it to hexagonal pencils and a modification of the longitudinal ribs and adjustment of the same. Fig. VII is a transverse section on the line VII VII, Fig. VI. Fig. VIII represents the preferred form of the cutter. Fig. IX represents a modification in the bed, and Fig. X represents a modification in the feed device.

1 represents the frame of any suitable form, but preferably having one side inclined at an angle of about thirty degrees for receiving the bearings for the several working parts of the machine.

2 represents the ribs, 3 the intermediate yielding bed, and 4 the feed-rollers mounted over the bed and having suitable spiral ribs, between the convolutions of which the pencils are held fast while they are pressed down upon the yielding bed by the body of the rollers.

5 represents the rotary cutter, and 6 the emery-wheel, which are preferably mounted upon a single shaft and driven by a fly-wheel 7, which communicates motion to a pulley 8 on the cutter-shaft through the medium of belt 9.

10 represents the drive-shaft, and on the end opposite to the fly-wheel is secured a pulley 11, which communicates motion through a suitable belt to a pulley 12 on the rear end of the shaft of one feed-roller 4, while a pinion 13, also mounted upon the shaft of said roller, gears either mediately or immediately with a precisely similar pinion 14 on the corresponding end of the shaft of the other feed-roller 4.

15 represents a gage, which consists in a vertical wall or rib projecting upward in front of the ends of the pencils and extending along the machine, the first two-thirds of its length being on a gentle incline, so as to permit the end of the pencil to move gradually under the knives, and the last third of its length being parallel to the feed-roller, the object of the gage being to permit the pencils to be fed forward gradually under the knives as the wood is removed until a large portion of the same is cut away, and then be passed along in a straight line for finishing the bevel on the wood. The rear rib terminates at the point where the pencil leaves the knives, and the bed 3 is provided at its rear end with a depression 17, which permits the rear ends of the pencils to be depressed by an enlargement 18 on the corresponding roller 4, so that as the point of the pencil passes from under the knives it will be raised by the effect of the depression and enlargement on its opposite end so as to present the lead which has been laid bare by the knives at a greater angle to the emery-wheel for the purpose of

making an abrupt but sharp point thereon without waste of material. After the pencil passes the emery-wheel, it will be released from the grip of the rollers and be allowed to slide or roll out of the machine.

The bed is preferably constructed of a trough-like metallic casting 19, with the parallel flanges 2, the filling of cotton-batting or other springy material 20, and a facing of virgin rubber 21, stretched over the filling and secured by screws or otherwise along the edges. The bed with the yielding but adhesive surface thus formed is placed in the machine beneath the rollers in a depressed seat formed for it in the frame, and its relative distance beneath the feed-rollers may be adjusted by means of the eccentrically-journale rods 22, which have levers 39, controlled by a screw-rod 40, whose seat is journaled in the frame. The eccentric-rods are journaled at different points relatively to the levers, so that one side of the iron bed-frame will be raised slightly more than the other. The ribs are cast with longitudinal grooves or channels, in which are inserted protruding strips 25 of rubber or other yielding material. As a modification, the bed may consist of the two ribs only located beneath the respective rollers and provided with yielding surfaces, as represented in Figs. VI and VII, in which 23 represents an inclined metallic or other base on which is mounted the sliding bolster 24, which has the inserted rubber strip 25, the guide-pin 26, passed through a perforation in an upward extension 27 of the base, said bolster being regulated longitudinally, and consequently vertically, by means of a hand-screw 28, journaled to the end of the bolster and engaging in a threaded projection 29 on the end of the base; or these ribs may be used with an intermediate detached yielding bed. As a modification of the bed, I may employ a rubber or equivalent base 30, having flexible projections 31, as represented in Fig. IX.

The feed-rollers are each provided with two spiral ribs 32 of sufficient pitch to feed the pencil gradually along the bed, the adhesive surface of which bed tends to rotate the pencils as they are fed. The rollers may be constructed of any suitable material—such as by molding rubber, papier-maché, and the like—or by turning from wood or by inserting strips of rubber or other suitable material in a spirally-grooved roller, and these rollers are preferably provided with supplementary spiral angular grooves 33 of greater pitch than the feeding-grooves, as represented in Fig. VI, as this adapts the roller to the hexagonal or other polygonal pencil as well as cylindrical, the object being to present a plane portion of the roller to a plane portion of the pencil and a corresponding surface of roller with the edges of the pencil. It is obvious that this feature is susceptible of various modifications, and by making the proper form and pitch of supplementary spiral the roll could be adapted to feed carpenter's pencils, which are gen-

erally made elliptical in cross-section. The modification of the feeding device is seen in Fig. X, in which is represented an endless feeding-belt 34, mounted on suitable rollers 35, and having worm-gearing 36 with the driving mechanism of the machine. Any suitable form of bed may be used with this feeder, and the same is located above the belt. The belt is supported in any suitable manner between the rollers. The pencil is turned by friction.

The cutter 5 consists, preferably, of a central body with three radial projections 37, or a cylinder with knives 38, set either tangentially or at a very acute angle to the tangent. I find it very desirable in practice to make the cutter with spirally-arranged knives, as represented in Fig. VIII, so that practically but one pencil is operated on at a time, thus reducing the amount of necessary driving force, and the knives may be so arranged that as the rear end of one leaves the pencils the forward end of the following one will enter upon its work. The rear corner of each knife is rounded so as to leave the pencils smooth as they pass out, the forward end being square.

The emery-wheel may be approximately the same size as the cutter, so that the end of the pencil will come in contact therewith by a very slight movement, which is accomplished by the depression at the rear end of the pencil, as hereinbefore explained.

By a machine as above described the pencil will be gradually fed, though maintained in a rigid position for the knives gradually rotated as it passes along, and when it leaves the machine the wood will be neatly removed, so as to expose a portion of the lead, which will itself be neatly pointed without cutting away much of the material and without in any manner weakening the lead. The machine may be fed automatically by means substantially the same as employed in pencil-grinding machines, and a number of pencils may be operated upon at a time, the spiral knife being used in this case for the purpose of making the cutting more even, it being obvious that by such use of the spiral knife but one pencil will be in contact with the knife at one time, and that each successive knife will set in as the preceding one moves off.

While my invention is described as a pencil-sharpener, it is obvious that it would be equally well adapted for sharpening any other articles requiring a point similar to the point of a pencil.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. In a pencil-sharpener, the combination of a frictional pencil turning or rolling device and the rotary knives, all substantially as set forth.
2. A pencil-sharpening machine consisting of a frictional pencil-rolling device, a suitable cutter across which the ends of the pencils are

moved in contact, and a finishing-wheel, all substantially as described.

3. In a pencil-sharpening machine, the combination of a suitable bed, a moving feed
5 adapted to engage the pencils and roll them across said bed, a rotary cutter with which the ends of the pencils are in contact as they are passed through the machine, and suitable drive and working connections between said
10 parts, all substantially as set forth.

4. In a pencil-sharpening machine, the combination of a suitable bed and a device for removing the material from the ends of the pencils, with the feed-rollers adapted to feed the
15 pencils sidewise, substantially as described.

5. In a pencil-sharpening machine, a device for feeding the pencils, consisting in the bed or support and the spiral rollers adapted to feed the pencils sidewise mounted above said
20 bed, substantially as set forth.

6. In a pencil-sharpening machine, the combination, with the suitable cutter or grinding device, of a feeding device having a depression at one end for pointing the pencils, substantially as set forth.
25

7. A combination of the device for feeding the pencils sidewise across the machine, the gage 15, and the rotary cutter, all substantially as set forth.

8. The combination of a feeding device, the grinder and cutter, and the gage 15, having a portion of its length inclined, substantially as and for the purpose set forth.
30

9. The combination of the feeding device, the rotary cutter, and the supporting-rib beneath the end of the pencil operated upon by the cutter.
35

10. In a pencil-sharpener, the combination of a suitable sharpening device and a feeding device consisting of the yielding member
40 having the adhesive surface and the parallel moving member located in such close proximity as to confine the pencils to the yielding member, whereby the pencil is rolled as it is carried forward by the moving member, substantially as explained.
45

11. The combination of a suitable cutter or grinding device with a feeding device consisting in a suitable bed having a depression 17, and a superposed feeding member 4, having an
50 enlargement 18, corresponding to the depression 17, and a support for the pencil forward of such depression, whereby the angle of the pencil is changed for sharpening the point, all substantially as set forth.
55

12. In a feeder for pencil-sharpening machines, the combination of the members between which the pencil is moved, one or both being adapted to admit the corners or ridges of the pencils, substantially as set forth.
60

13. In a pencil-sharpening machine, the combination, with a suitable sharpening device and a suitable bed or support for the pencils, of a feed-roller having the spiral ribs 32, forming the grooves in which the pencil is confined, and the supplementary spiral grooves 33, all substantially as and for the purpose set forth.
65

ARTHUR J. MUNDY.

Witnesses:

E. H. KEEN,
GEO. P. HALL.