No. 792,785. PATENTED JUNE 20, 1905.

P. P. O'HORO.

PENCIL SHARPENING MACHINE.

APPLICATION FILED APR. 8, 1905.

Fig. 1.

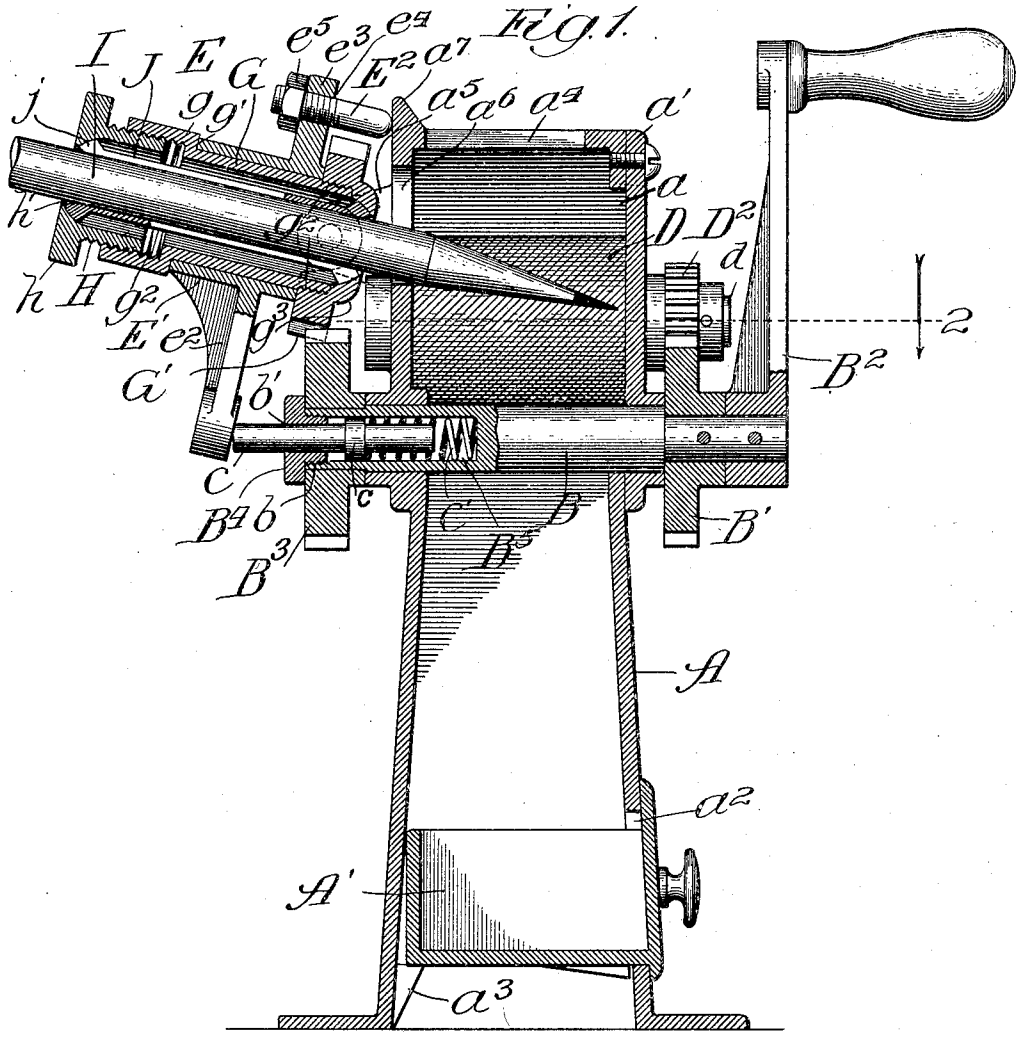
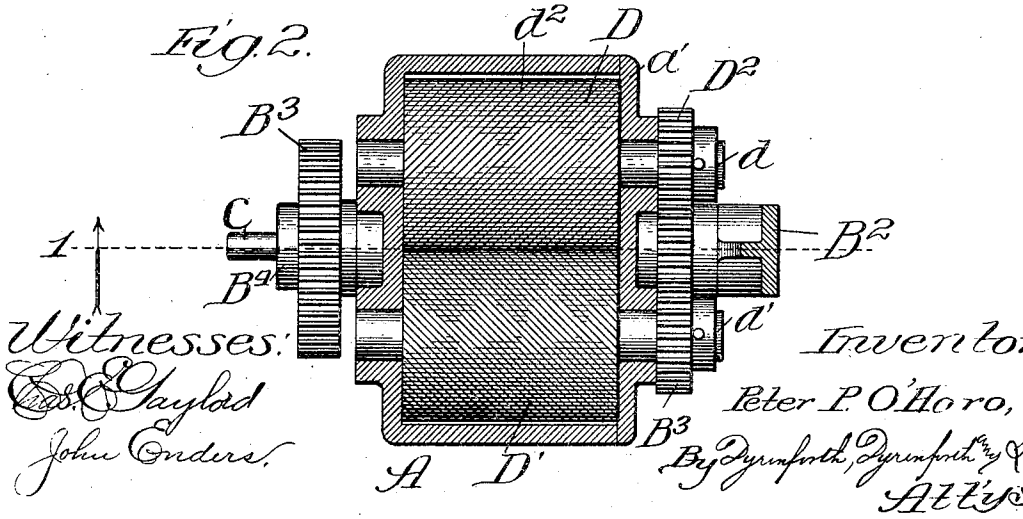


Fig. 2.



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No. 792,785. Patented June 20, 1905.

UNITED STATES PATENT OFFICE.

PETER P. O'HORO, OF CHICAGO, ILLINOIS.

PENCIL-SHARPENING MACHINE.

SPECIFICATION forming part of Letters Patent No. 792,785, dated June 20, 1905.

Application filed April 8, 1905. Serial No. 254,518.

To all whom it may concern:

Be it known that I, PETER P. O'HORO, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Pencil-Sharpening Machines, of which the following is a specification.

My invention relates to an improvement in pencil-sharpening machines of the class in which a rotary disk or cylinder provided with a series of blades is employed, in connection with a holder, for the pencil to be sharpened thereby.

The primary objects of my invention are to provide a construction of machine in the class referred to which will effect the sharpening of a pencil without requiring constant feeding of it by hand against the cutting means and which will permit a pencil to be sharpened quickly and without unnecessary waste thereof.

Further objects are to provide a construction of sharpener in which the holder for the pencil may be adjusted to produce any desired bevel upon the end of the pencil, thus to avoid unnecessarily cutting it away, and to provide a machine which is easily operated and of simple construction.

I accomplish these objects by a construction wherein the pencil-holding device, coöperating with rotary cutting means, is journaled on the casing of the machine in a manner adapting it to rock and be resiliently held against depression at any desired angle relative to the cutting device.

My invention is illustrated in its preferred form in the accompanying drawings, in which—

Figure 1 is a vertical section taken at the line 1 on Fig. 2 viewed in the direction of the arrow and showing the position of a pencil after the operation of sharpening has been completed, and Fig. 2 is a section taken at the line 2 on Fig. 1 and viewed in the direction of the arrow.

A denotes a casing having an opening a in one side near its upper end, over which a covering-plate a' is secured, an opening a^2 in the same side near the bottom, through which a drawer A′ for catching the shavings that drop from a pencil being sharpened is inserted to rest upon a lug a^3 centrally on the inner surface of the opposite side of the casing, and an opening a^4 in the top thereof, through which the pencil may be observed when adjusted in position and undergoing the sharpening operation. Projecting from the side of the casing opposite the opening a on opposite sides of an opening a^6 in the casing are similar ears a^5, of which only one is shown, owing to the nature of the view selected for illustration, and projecting from the top of the casing is a stop-lug a^7. An operating-shaft B is journaled in the upper part of the casing to project beyond the opposite faces thereof and carries on one end a gear B′ and a crank-handle B^2 and on its opposite end a gear B^3. The operating-shaft contains in its distal end, which is internally screw-threaded at b, a chamber B^5, and into this end of the shaft is screwed a plug B^4, containing an opening b', through which the outer end of a plunger C projects, the plunger being confined in the chamber at a shoulder c on the plunger against a spiral spring C′, housed therein. Thus the outer end of the plunger is constantly pressed against the pencil-holding device in its operation, as will be hereinafter described.

D D′ are cutters, preferably of cylindrical form, journaled in the casing A on shafts $d\,d'$, respectively, above the shaft B and equidistant therefrom, the cutters being provided with cutting-blades d^2, formed thereon spirally, one being a right and the other a left cutting-blade, the cutters being arranged in the casing in a manner to cause the spiral blade of one to converge relative to that of the other, as shown in Fig. 2. Secured to the shafts $d\,d'$, respectively, are gears D^2 D^3, both meshing with the gear B′ to cause the cutters when the crank-handle is operated to rotate in the same direction, but in a direction opposite to that of the crank-handle.

E is a pencil-holding device which in its preferred form comprises a tubular head E′, journaled at its inner end between the ears a^5 for pivotally mounting it on the casing to

adapt it to be rocked thereon. An arm e^2 projects from the under surface of the head E′ and is engaged by the outer end of the plunger C, which tends under the action of the spring C′ constantly to force the pencil-holder toward its normally raised position. A lug e^3, projecting from the top of the head E′, is provided with a threaded opening e^4, into which a stop-finger E^2, threaded at one end and provided thereon with a retaining-nut e^5, is screwed to be adjustable therein and adapt its free end to abut against the lug a^7 on the casing for regulating the limit of rocking of the pencil-holder. Journaled in the head E′ and projecting beyond its opposite ends is a tubular shell G, provided at one end with an annular offset g, forming a shoulder g' on its outer surface, abutting against the outer end of the head, and at its other end with an external screw-thread g^2. On the end of the shell G nearest to the frame A is secured a gear G′ of larger diameter than the gears D^2 D^3 and meshing with the gear B^3 to cause the rotary parts of the pencil-holding device to rotate with the cutters and in the same direction, but at a lower rate of speed. The gear G′ is provided on its inner face with a central apertured boss g^3, having its inner face depressed to form a concave inner surface. A hollow plug H, provided at one end with a milled head h, having a central opening h' therein, toward which the interior of the plug is roundingly contracted, as shown, to form a concave surface similar to the one in the boss g^3, screws into the enlarged end of the tubular shell G, the threaded connection of the plug with the shell permitting the plug to be screwed in and out for the purpose hereinafter explained. Housed in the shell G is a resiliently-collapsible pencil-gripping chuck J, which is best formed of spring-steel by cutting a series of slots in the wall of the cylinder from opposite ends thereof in staggered relation to each other and having enlarged ends beveled on their outer edges to form tapering end bearings, which engage, respectively, with the concave inner surfaces of the boss g^3 and plug H. When the plug is screwed into the shell G to contract the chuck, the latter firmly grips and rigidly holds a pencil I inserted therein to be sharpened.

The operation of the machine is as follows: The pencil-holder is drawn down, rocking it upon its pivotal support against the resistance of the spring C′, and the end of the pencil to be sharpened is passed through the holder and the opening a^6 in the casing to cause said end to bear more or less horizontally against the rotary cutters. The pencil is then clamped within the holder by screwing the plug H into the shell G, thus causing the chuck to grip the pencil and hold it firmly in position. The sharpening operation is performed by turning the crank B^2, which, being geared to the rotary cutters and to the rotary parts of the pencil-holding device, causes them to be rotated simultaneously and correspondingly to cut away the pencil about its end while rotating it. As the cutters taper the pencil toward its end it sinks deeper and deeper into the space between them, the spring-pressed plunger C exerting constant pressure upon the pencil-holding device at its arm e^3 to cause the end of the pencil to be constantly pressed against the cutters while changing its angle relative thereto until the stop-finger E^2 engages the lug a^7 on the casing, arresting the pencil-holding device in its upward movement and discontinuing the further downward feeding of the pencil to the cutters. Thus any superfluous turning of the crank after the pencil has been sharpened will not cause the pencil to be cut away and wasted.

The adjustable stop-finger E^2 affords means for arresting the rocking of the holder at different positions, thus enabling the operator to set the machine to produce any desired bevel upon the end of the pencil.

By providing the two coöperating cutting-cylinders instead of one cutter, as hitherto, the sharpening operation is materially expedited and accordingly facilitated.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a pencil-sharpening machine, the combination with the casing, of a pair of coöperating rotary cutters and a pencil-holding device resiliently mounted on said casing to rise as the pencil end is being tapered by the sharpening operation and depress said end deeper and deeper between the cutters.

2. A pencil-sharpening machine comprising, in combination with a casing, a pair of cooperating rotary cutters journaled in the casing, a rotary pencil-holding device mounted on the casing to adapt it to be rocked, means for resiliently holding said device against depression, and means for regulating the extent of rocking of said device, for the purpose set forth.

3. A pencil-sharpening machine comprising, in combination with a casing, a pair of cooperating cylindrical cutters each provided with a cutting-blade formed spirally thereon and journaled in the casing to rotate in the same direction, a pencil-holding device having a tubular head pivotally mounted on the casing, a shell journaled in said head and means in said shell for releasably gripping a pencil, and means for resiliently holding said device against depression, for the purpose set forth.

4. A pencil-sharpening machine comprising, in combination with a casing, a pair of cooperating cylindrical cutters each provided with a cutting-blade formed spirally thereon and journaled in the casing to rotate in the same direction, a pencil-holding device having a tubular head pivotally mounted on the cas-

ing, a shell rotatably confined in said head and a contractible gripping member confined in said shell, and means for resiliently holding said device against depression, for the purpose set forth.

5. A pencil-sharpening machine comprising, in combination, a casing, a shaft journaled therein, rotary cutters journaled in said casing, a rotary pencil-holding device mounted on said casing to be rocked thereon, gear mechanisms connecting said shaft with said cutters and said pencil-holding device, and a spring-actuated plunger in said shaft engaging said device to resiliently maintain said pencil-holding device against depression.

6. In a pencil-sharpening machine, the combination with the casing, of a pair of coöperating rotary cutters, a rotatable pencil-holding device mounted to rock on said casing and resiliently held against depression, a stop-lug in the casing and a stop-finger adjustably supported on said device to engage said lug for regulating the extent of rocking of said device.

7. A pencil-sharpening machine comprising, in combination with a casing, a pair of cylindrical cutters on shafts journaled in the casing, a handle-equipped operating-shaft journaled in the casing and geared to said cutter-shafts to rotate them in the same direction, said operating-shaft containing a chamber in its distal end and carrying thereon a gear, a spring-pressed plunger confined in said chamber, and a pencil-holding device having a tubular head provided with an arm engaging said plunger and mounted on the casing to be rocked thereon, a shell rotatably supported in said head and carrying a gear meshing with the gear on said distal end of the operating-shaft, a chuck confined in said shell, and a hollow screw-plug working in the outer end of said shell against the chuck therein, for the purpose set forth.

8. A pencil-sharpening machine comprising, in combination with a casing provided with a stop-lug, a pair of cylindrical cutters on shafts journaled in the casing, a handle-equipped operating-shaft journaled in the casing and geared to said shafts to rotate them in the same direction, said operating-shaft containing a chamber in its distal end and carrying thereon a gear, a spring-pressed plunger confined in said chamber, a pencil-holding device having a tubular head provided with an arm engaging said plunger and mounted on the casing to be rocked thereon, a shell rotatably supported in said head and carrying a gear meshing with the gear on said distal end of the operating-shaft, a chuck confined in said shell, and a hollow screw-plug working in the outer end of said shell against the chuck therein, and a stop-finger adjustably supported on said tubular head to engage said stop-lug.

PETER P. O'HORO.

In presence of—
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J. H. LANDES.