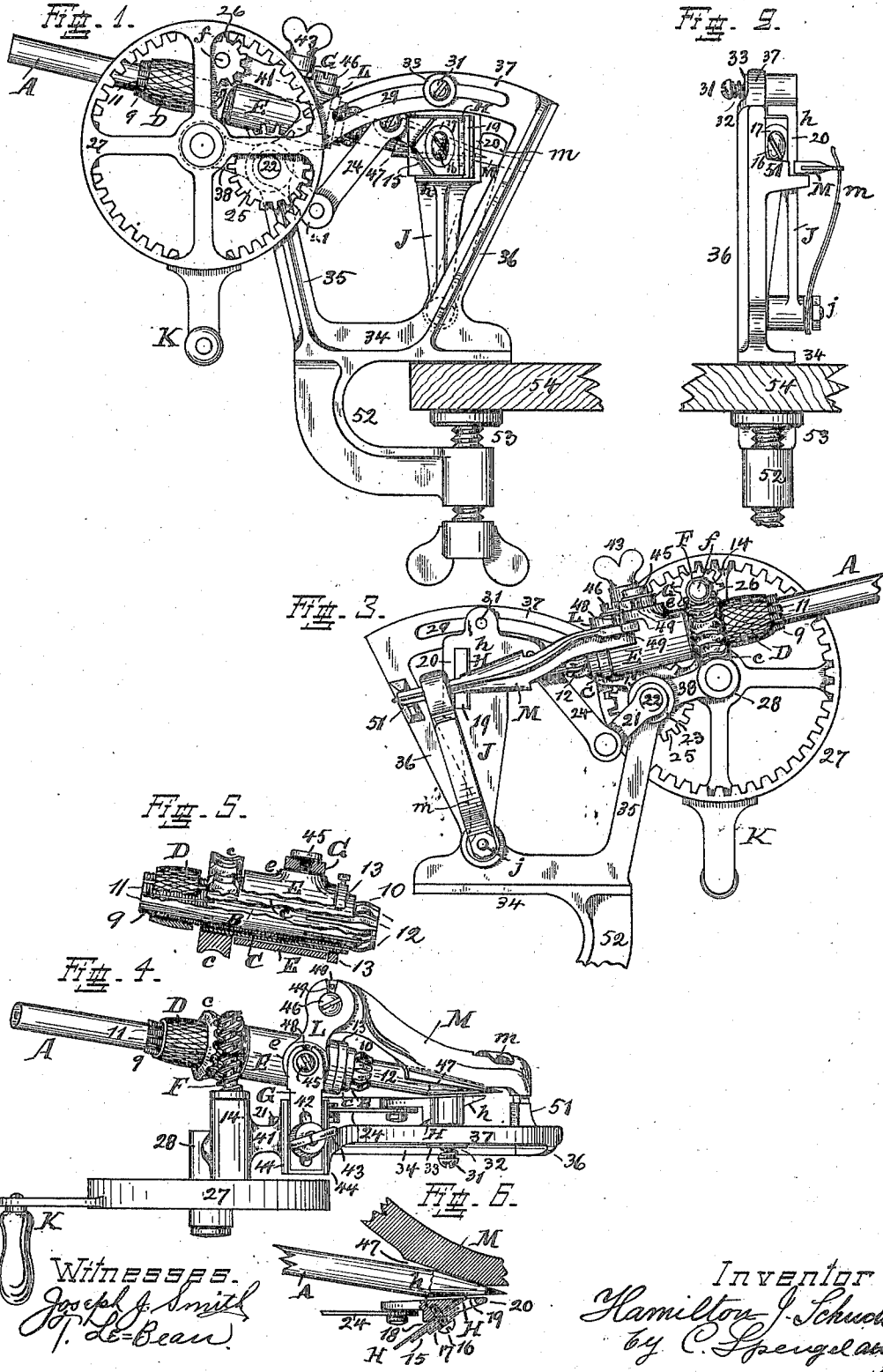


H. J. SCHUCH.  
PENCIL SHARPENER.  
APPLICATION FILED MAY 9, 1908.

951,457.

Patented Mar. 8, 1910.



# UNITED STATES PATENT OFFICE.

HAMILTON JOHN SCHUCH, OF CINCINNATI, OHIO.

PENCIL-SHARPENER.

951,457.

Specification of Letters Patent.

Patented Mar. 8, 1910.

Application filed May 9, 1908. Serial No. 431,737.

*To all whom it may concern:*

Be it known that I, HAMILTON JOHN SCHUCH, a citizen of the United States, and residing at Cincinnati, Hamilton county, State of Ohio, have invented a certain new and useful Pencil-Sharpener; and I do declare the following to be a clear, full, and exact description of the invention, attention being called to the accompanying drawing, with the reference characters marked thereon, which form also a part of this specification.

This invention relates to a certain new and useful pencil-sharpener constructed and arranged as the same and its manner of use is described hereinafter and as pointed out in the claims and illustrated in the accompanying drawing, in which:—

Figure 1, shows the device in elevation and attached in position ready for use, that side of it being shown which is nearest to the user. Fig. 2, is an end-view of the device, it showing the end at the right of Fig. 1. Fig. 3, is a view similar to Fig. 1, and shows the device from the opposite side there shown. Fig. 4, is a top-view of the device as the same appears in Fig. 1. Fig. 5, is a side-view, partly in section of the detached pencil-holder. Fig. 6, is a horizontal section through the sharpening blade and its carrier, showing also adjacent parts.

The pencil A to be sharpened and pointed is first introduced into a tube B of resilient metal which is loosely fitted into a sleeve C in a manner which permits it to be lengthwise adjusted therein. At its upper end, referring particularly to Fig. 5, this tube is tapering and externally screw-threaded as shown at 9. A knurled nut D is mounted upon this end. Near its lower end this tube is diametrically enlarged as shown at 10. Both ends are split by provision of a number of slots which extend inwardly from each end. This produces resilient tongues 11 and 12 at upper and lower ends respectively of the tube which, with their free ends are adapted to engage and to hold a pencil. With nut D loosened, and moved out toward the adjacent end of tube B, as shown in Fig. 5, the pencil may be inserted into this latter, after which the nut is manipulated, that is screwed inwardly on the tube whereby tongues 11 are caused to impinge upon the pencil. The tube is at the same time drawn into sleeve C, whereby the lower tongues 12 are also caused to impinge upon the pencil,

so that tube B with the pencil inside is now firmly held within sleeve C, as shown in Figs. 1, 3 and 4. This sleeve is contained in a bearing E beyond both ends of which it projects. It is free to rotate therein, but longitudinally confined by means of shoulders at both ends. A collar 13 may serve as the shoulder at one end, while at the other end a machine-element adapted to rotate the sleeve is rigidly mounted thereon and serves at the same time as such a shoulder at this end. The nature of this machine-element depends upon the means used for its actuation and a worm F, being used for such purpose, said element is accordingly a worm-wheel *c*. Shaft *f* of this worm is supported in a bearing 14. Bearing E which carries the pencil-holder is provided with a boss *e* on its upper side and engaged thereat by a bracket G, whereby it is supported.

The lower end of the pencil, referring for instance to Fig. 4, is acted upon by means of a reciprocating, sharpening blade H, the pencil having been placed accordingly so as to project into the path of this blade. The positional relation between the pencil and the path of this blade is an angular one, the former being accordingly held by the pencil support, tube B, sleeve C, bearing E and bracket G, all being accordingly arranged. The length of the point to be formed on the pencil and the amount of wood to be removed therefrom, lengthwise considered, is determined by this angle. There is also an angular relation between blade H and the path in which it is moved and which angle is the cutting-angle of the blade, its carrier *h* to which the blade is attached being accordingly formed. Fig. 6 illustrates these angular relations. Blade H is braced by a plate 15 and held to the carrier by a screw 16, a washer 17 being interposed. Carrier *h* presents substantially a rectangular frame which contains the inclined portion 18 against which the blade is secured with its edge projecting through a slot 19 between this inclined portion and a bar 20 on the front edge of the carrier. This latter is arranged at, or forms the upper end of an arm J, pivoted at *j* and oscillated thereon for the purpose of reciprocating the blade-carrier with reference to the end of the pencil. This motion is obtained by means of a crank 21, the shaft 22 of which is supported on a bearing 23 and which by means of a link 24 connects to carrier *h*. While the

sharpening blade reciprocates with reference to the end of the pencil, this latter is slowly rotated at the same time, by its supporting means, (tube B and sleeve C,) so that all parts of the pencil-end, circumferentially considered, are successively subjected to the action of blade H and wood is removed evenly all around. These simultaneous motions of blade H and of sleeve C imply of course that both are actuated at the same time, which also means simultaneous rotation of worm F and of crank-shaft 22. A gear-train is used for such purpose which consists of pinions 25 and 26, the first being mounted upon crank-shaft 22 and the other upon worm-shaft f. These pinions are supported in one plane, so that one driving-gear may rotate them. This latter consists of an internal gear-wheel 27, supported in a bearing 28 and has a crank-handle K for its manipulation. Carrier h, at the upper end of arm J, is held to its movement by guiding-means involving a curved slot 29, in which a pin 31 travels, which projects from the carrier. This pin is seated with a screw-thread, to be adjustable, so that by means of an interposed spring 32 and a washer 33 any lost motion and wear may be taken up, whereby the sharpening blade always operates with a firmly sustained motion.

The frame which supports the various parts described consists of the base 34, the upright members 35 and 36 and the transverse member 37 the latter containing also slot 29 which forms the guide for blade-carrier h. The pivotal bearing for arm J is formed at the junction of frame-members 34 and 36. Bearing 23 for the crank-shaft is formed at the junction of members 35 and 37. Bearing 28 of the driving-gear is formed in a frame extension 38. Another extension 39 supports bearing 14 of the worm-shaft. The space between this bearing and frame-member 37 is bridged by a frame-member 41 which supports bracket G to the end of which the pencil-support is attached. The connection of this bracket is an adjustable one, so that the position of the pencil, that is its proximity with reference to the path of the sharpening blade, may be adjusted if necessary, as best shown in Fig. 4. Said bracket is accordingly slotted as shown at 42 and a set-screw 43 is provided to hold it in its adjusted position. Frame-member 41 is broadened at this point to form a substantial seat for this bracket and the edges of the seat form guides 44 between which said bracket is held when adjusted in or out. A screw 45 is used to hold the pencil support to this bracket G, it being seated in boss e of bearing E. This latter is extended outwardly to form another bracket L as best shown in Fig. 4, and which bracket supports at its end a pressure-arm M, held thereto by

a screw 46 and the free end of which arm is arranged to be opposite the path of the reciprocating sharpening blade, and channeled out thereat and toward the blade as shown at 47. The connection of the pencil-holder, at its bearing E, to bracket G, by screw 45 and the connection of pressure-arm M to bracket L by screw 46 is not a rigid one in either case, but so as to allow each of these parts a certain pivotal movement about its point of attachment, this movement being limited by notches 48, one being provided in each of the brackets into which pins 40 provided on the parts supported by them extend. A spring m, rigidly attached at one of its ends, engages with its free end the free end of pressure-arm M and holds the same yieldingly toward blade H, the action of the spring being limited by a stop 51 which determines the normal position of the pressure arm as shown in Figs. 2 and 4.

When a pencil is inserted into its holder and pushed through the same so as to project into the space between blade H, and the channeled part of arm M, as shown in Fig. 4, this arm yields outwardly to the extent of the thickness of the pencil and all adjustable parts position themselves, with reference to the pencil, the pencil-holder on bracket G and arm M on bracket L. The end of the pencil occupies the channeled portion of the pressure-arm and by this latter is held into the path of the sharpening blade and firmly backed by it against the action of the blade which latter tends, while in motion, to push the pencil aside. At the same time arm M, subject to the action of spring m, forces the pencil gradually inwardly as wood is removed from the latter and maintains it in the cutting-path of the blade.

For use, the device may be held in the hand the frame, by suitable extension, being arranged for the purpose. By preference the device is arranged however for attachment in a stationary position for which purpose base 34 is extended downwardly to form a bracket 52, which supports a clamping screw 53, whereby the device may be attached to the edge of the top 54 of a table, or of a desk for instance, as shown in Fig. 1. Base 34 in this case forms the other clamping member complementary to screw 53.

Having described my invention, I claim as new:

1. In a pencil-sharpener, the combination of a reciprocatory sharpening blade, crank-mechanism operatively connected to it for the purpose of reciprocating the same, a crank-shaft forming part of this mechanism, a pencil-holder, a bearing for supporting the pencil holder in a certain positional relation with reference to the blade, a worm-wheel connected to this pencil-holder, a worm in mesh therewith, a shaft for this

worm, pinions, one on the crank-shaft and one on the worm-shaft, and a driving-gear in mesh with both pinions and adapted to rotate both simultaneously.

5 2. In a pencil-sharpener, the combination of a sharpening blade, an arm pivotally supported at one of its ends and provided at its free end with a carrier to which the sharpening blade is removably attached, a  
10 link connected at one of its ends to this carrier, a crank connected to the other end of this link, a shaft upon which the crank is mounted, means to rotate this shaft and a support for the pencil.

15 3. In a pencil-sharpener, the combination of adjustable pencil-holding means, a bearing therefor, mechanism to rotate these holding means in this bearing, a sharpening blade, means to reciprocate the same on one  
20 side of the supported pencil and with reference to one end thereof, a pressure-arm pivotally supported at one of its ends and

adapted to engage with its other end the end of the pencil acted upon by the blade and on the side thereof opposite to the blade 25 and a spring to hold this pressure arm yieldingly in contact with the pencil.

4. In a pencil-sharpener, the combination of a frame, a reciprocatory sharpening blade supported thereon, a pencil-holder, a sup- 30 port for this holder adjustably connected to the frame and to which the holder is yieldingly attached with reference to the path of the blade, and a pressure-arm pivotally connected to the support of the pencil-holder 35 and adapted to yieldingly hold the pencil into the path of the reciprocatory sharpening-blade.

In testimony whereof, I hereunto affix my signature in the presence of two witnesses. 40

HAMILTON JOHN SCHUCH.

Witnesses:

JOSEPH J. SMITH,  
C. SPENGEL.