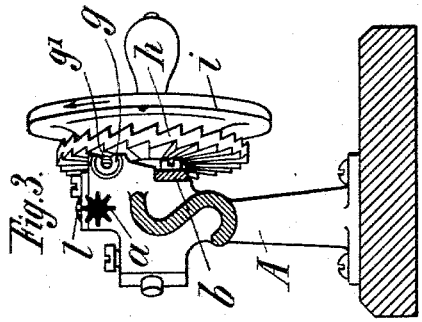
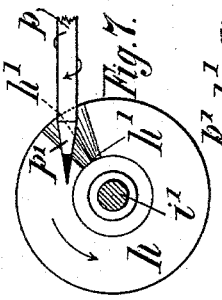
(No Model.)

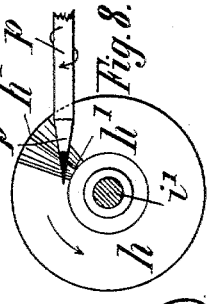
H. A. H. GUHL.

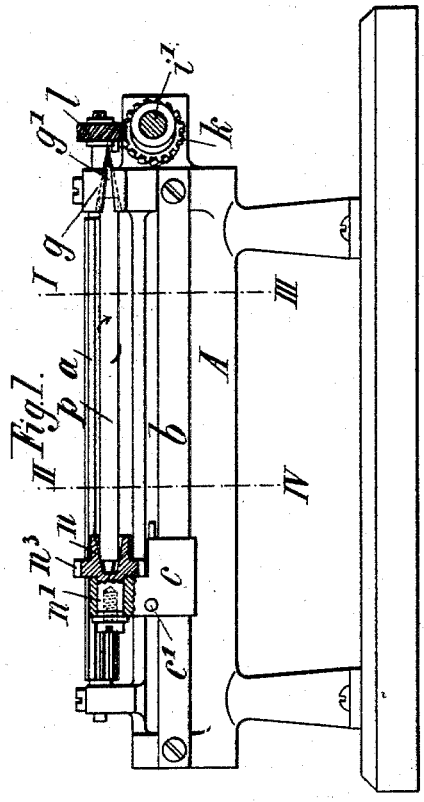
APPARATUS FOR SHARPENING PENCILS.

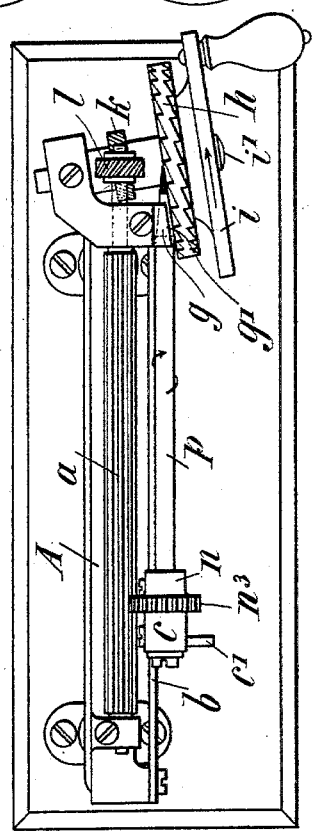
No. 593,093. Patented Nov. 2, 1897.

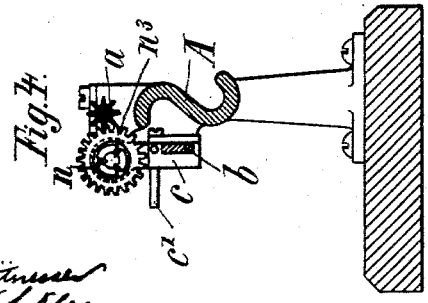


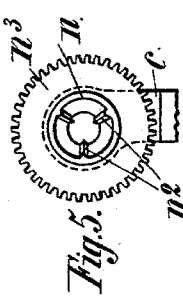


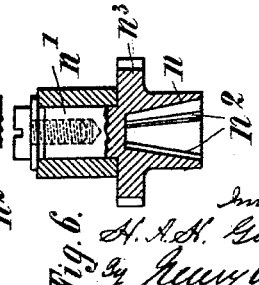












Witnesses
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UNITED STATES PATENT OFFICE.

HEINRICH AUGUST HERMANN GUHL, OF HAMBURG, GERMANY.

APPARATUS FOR SHARPENING PENCILS.

SPECIFICATION forming part of Letters Patent No. 593,093, dated November 2, 1897.

Application filed May 17, 1897. Serial No. 636,954. (No model.)

To all whom it may concern:

Be it known that I, HEINRICH AUGUST HERMANN GUHL, a subject of the German Emperor, and a resident of Hamburg, in the German Empire, have invented certain new and useful Improvements in Apparatus for Sharpening Pencils or the Like, of which the following is a specification.

This invention relates to improvements in apparatus for sharpening writing and drawing pencils—such as lead, chalk, and slate pencils—by means of a rotary cutter-disk which is provided with a holder for the point end which is arranged close to the cutter-disk and which has made in it a slot in which the point of the rotating pencil is securely guided into the range of action of the cutting edges of the disk. In proportion as the cutting edges of the disk render the point more and more conical the point bears more and more against the inner wall of the holder and thus effects its own secure guidance. The pressure of the cutting edges upon the wood of the pencil is thus entirely taken up by the holder, and the point cannot be broken at the dangerous places—*i. e.*, close up in front of the wood or in the wood. After sharpening, the pencil can be quickly removed from the machine by simply pushing it back.

An apparatus constructed in accordance with this invention is represented in the accompanying drawings, which form part of this specification, and in which—

Figure 1 is a longitudinal elevation, partly in section, and Fig. 2 a plan, of the improved sharpening apparatus. Fig. 3 is a section on the line I III, Fig. 1; and Fig. 4 a section on the line II IV, Fig. 1. Fig 5 is an end view, and Fig. 6 a longitudinal section, of the chuck carrying the pencil to be sharpened. Both the latter views are drawn on a somewhat enlarged scale. Figs. 7 and 8 are detail views showing different positions of the cutter-disk or its cutting edges, respectively, with relation to the pencil's point.

Similar letters refer to similar parts throughout the several views.

A frame or standard A carries parallel to it a guide-bar b, on which is movably mounted a sliding carriage c, provided with a chuck n, which is bored out conically and has in its conical bore a number of projecting longitudinal ribs n^2. The chuck is pivoted by means of a journal or pin n' in the sliding carriage c and engages by means of a ring of teeth or a pinion n^3 with a toothed-shaft a, so mounted in the main frame as to be parallel to the guide-bar b. The chuck n is adapted to receive the ends of pencils of different thicknesses, and its sharp ribs n^2 are adapted to enter the surface of and securely hold a pencil p inserted therein. The pencil is also automatically and accurately centered when it bears with its forward end in the guiding-holder g, with the result that a perfectly uniform point is produced.

The front end of the pencil to be sharpened is received in the conical holder g, which is fixed to the frame of the apparatus axially in relation to the hole in the rear chuck n and is provided opposite to the cutter-disk h with a wedge-shaped slot g', formed by beveling at one side.

The cutter-disk h, which is placed close to this slot g', is mounted in such manner that its cutting edges h', which are directed radially to the axis of rotation of the disk h, are situated in a plane which determines or is tangential to the cone of the pencil-point p' to be formed. The cutter-disk h preferably consists of a steel ring which has at each side a circular row of radial cutting edges h' and which is screwed on the axle or boss of a crank-disk i, so that when one ring of cutting edges is worn out the other ring of cutting edges can be brought into position for use by reversing the steel ring or cutter-disk h, respectively.

Upon the rotary axle i' of the cutter-disk there is mounted a skew-bevel wheel k, which gears into a skew-bevel wheel l on the aforesaid toothed shaft a, so as on the rotation of the cutter-disk h to cause, through the shaft a, the rear chuck n and the pencil p, inserted therein, to rotate, preferably in a direction such that adjacent parts of the cutter-disk h and the pencil-point p' will move in opposite directions. The ratio of the gearing should be made such that the cutter-disk h will rotate about twice as fast as the pencil p.

Each cutting edge h' in succession makes a drawing cut upon the front end p' of the

pencil p, which moves through the slot g' in the front holder g into the range of action of the cutting edges h'.

In view of the angular relation between the pencil and cutter-disk each of the cutting edges h' will successively make a draw cut from the outer to the inner end of such edge, and thereby form the cone and point of the pencil as the latter is fed toward the cutter-disk, the outer end of one of the cutting edges beginning to cut before the inner end of a preceding edge has completed its draw cut, the next following cutting edge or edges having already begun to cut at the base of the point, which is slowly rotated. This operation is an imitation of the sharpening by means of a penknife, but produces conical points of much greater exactness of shape and in a considerably shorter time than can be done by hand.

During the sharpening the pencil must be pushed forward with a gentle pressure, for which purpose the pressure of a finger upon the sliding carriage c or upon a particular part c' thereof is sufficient.

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

1. In a pencil-sharpening machine, a rotating cutter-disk having cutter-teeth radiating from its axis of rotation, a pencil-holder for one end of the pencil adapted to move toward and from said cutter-disk and to present the other end of the pencil tangentially to the cutting-face of said disk, a fixed guide for the last-named end of the pencil having a longitudinal wedge-shaped slot facing said cutting-face of the cutter-disk, and means for rotating the pencil in the fixed guide or holder, controlled by the rotation of the cutter-disk, for the purpose set forth.

2. In a pencil-sharpening machine, the combination with a cutter-disk having cutter-teeth radiating from its axis of rotation, and having a spindle, of a toothed shaft geared to said spindle, a holder for one end of the pencil geared to said shaft, said holder being journaled to its support, a guide on said support having motion toward and from the cutter-disk, and a guide for the end of the pencil to be sharpened, said parts arranged to present such end tangentially to the cutting-face of said disk, for the purpose set forth.

3. In a pencil-sharpening machine, the combination with the cutter-disk having cutter-teeth radiating from its axis of rotation, its spindle, and the toothed shaft a geared to said spindle; of the support c, the chuck n journaled thereto and geared to said shaft a, said chuck being provided with an inwardly-tapering axial cavity having radially-projecting teeth and a fixed guide or holder for the end of the pencil to be sharpened for the purpose set forth.

4. In a pencil-sharpening machine, the combination with a cutter-disk having cutter-teeth radiating from its axis of rotation, its spindle, and the toothed shaft a geared to said spindle to revolve at a lower rate of speed; of a holder for one end of the pencil geared to said shaft a, a support for said holder adapted to move toward and from the cutter-disk so as to present the end of the pencil to be sharpened tangentially to the cutting-face of said disk, and a guide for said pencil end, for the purpose set forth.

5. The herein-described pencil-sharpening machine, consisting of a main frame A, a spindle i' journaled therein, a cutter-disk fixed on said spindle, a toothed shaft a journaled in said main frame at an angle to and in gear with said spindle, a guide-rod, a support adapted to slide thereon, a chuck journaled in said support and in gear with said shaft, and a slotted guide or holder mounted tangentially to the cutter-disk, for the purpose set forth.

6. The herein-described pencil-sharpening machine, consisting of a main frame A, a spindle i' journaled therein, a disk i fixed on said spindle, a two-faced reversible cutter h mounted on said disk, a toothed shaft a journaled in said main frame at an angle to and in gear with said spindle, a guide-rod parallel with said shaft, a support adapted to slide thereon, a chuck adapted to receive one end of a pencil, journaled in said support and in gear with said shaft, and a conical guide or holder g provided with a wedge-shaped slot g' in which slot the end of the pencil to be sharpened is presented tangentially to the cutter-disk, substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 3d day of March, 1897.

HEINRICH AUGUST HERMANN GUHL.

Witnesses:
ALEXANDER SPECHT,
FRANZ ZAPF.